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**AN INVESTIGATION INTO THE
PERCEPTIONS OF MENTAL TOUGHNESS
OF ADVENTURERS/ EXPLORERS, ELITE
ATHLETES AND ELITE COACHES**

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B. Ed M. Ed

**A thesis submitted in partial fulfilment of the
requirements of the University of Northumbria at
Newcastle for the degree of Doctor of Philosophy**

2006

Abstract

An in-depth qualitative investigation into mental toughness combining phenomenological interview, interpretative phenomenological analysis (IPA) and emergent grounded theory (EGT) was conducted, in order to understand how adventurers/explorers, elite coaches and elite athletes perceived the concept. Twenty-one adventurers/ explorers, thirty-three elite coaches and thirty-seven elite athletes (total =91) were interviewed 'in depth' about their perceptions of mental toughness from which 3 discrete grounded theories emerged. Strict sampling criteria were applied and 86% of elite athletes and 88% of elite coaches had either won medals or coached medal winning athletes at World, Olympic or Commonwealth level. The adventurer/explorer sample contained successful Everest Mountaineers and world renowned climbers (11), polar explorers (3), round the world yachtswomen and travelling adventurers (6). Phenomenological interviews were conducted, transcribed, member checked and returned by over 93% of the sample. Preliminary IPA analysis provided the resonant and meaningful data themes for the emergent grounded theory analysis (Glaser, 1989). The research approach was unique to the study of mental toughness from within the naturalistic paradigm and compliments existing research which has attempted to understand the phenomenon (Fourie and Potgieter., 2001; Jones *et al.*,2002; Middleton *et al.*, 2004; Bull *et al.*, 2005).

The findings demonstrate evidence of huge individual diversity of meaning of what mental toughness means to participants within all samples. Such diversity was clouded when findings were assumed under collective conceptual headings which combined related themes.

When conceptual and category data is considered the findings show support for previous work. However, findings show the real meaning attached to what mental toughness is to people lies beneath the broader category and conceptual frameworks. Such meaning is only understood when deeper levels of analysis are explored. These findings offer evidence that such diversification of personal meaning exists when alternative methodology is applied. As a result there will be no attempt to offer an all encompassing operational definition of what mental toughness is from within each of the three discrete samples.

Findings showed striking similarity in elite athletes and elite coach perceptions of mental toughness with major categories emerging in self confidence and belief, dealing with event pressure, effective mental application, physical coping ability, training and situational toughness and commitment and determination. Athletes perceived the additional category of self control and discipline to be centrally related to the concept, a category not strongly supported by elite coaches. The categories were supported by 20 and 24 inter-related concepts within the elite coach / athlete samples and by 16 concepts within the adventure/ explorer sample. Adventurer/ explorers perceived mental toughness to be more related to safety and survival , coping with stress and anxiety, knowing oneself, coping with success and failure, having undivided attention and physical coping ability.

Findings support preliminary work of Jones *et al.* (2002) Middleton *et al.* (2004) and Bull *et al.* (2005) which suggests mental toughness is strongly related to self belief, dealing with pressure and anxiety, focus and dealing with pain. The findings also show that mental toughness is perceived by all three samples to be a complex integration of psychological concepts that support the major categories and is contextually driven. It is a multi-dimensional psychological phenomenon. These findings provide a clearer conceptual understanding of mental toughness is that may assist future research. Overall, this study has advanced existing research understanding in the provision of a well grounded theoretical framework for mental toughness and provides evidence in the value of adopting a phenomenological approach which is unique in attempting to understand the concept. However, it also appeals for further qualitative studies which explore different methodologies within the naturalistic paradigm in an attempt to further explain mental toughness.

The investigation was principally focused on establishing what mental toughness 'is' based on people's perceptions and 'lived experience'. Future research should focus on how it can possibly be developed and if mental toughness transfers across different contexts. The nature of the situation (i.e. adventure v elite sport) is thought to be an influential factor in differing perceptions and future research may also target more diverse populations attempting to provide more evidence that it is situational specific, contextually driven or indeed transferable.

Acknowledgements

I would like to thank Professor Don Watson and Dr Delia Wakelin for their patience and support throughout the duration of the project.

This is dedicated to my mum who has always supported me through my studies.

Finally I would like to thank AJ for her love and support.

Authors Declaration

DECLARATION

I declare that this thesis is based on my research carried out during the period from September 1996 to May 2006

The content of the thesis is entirely my own work; it has no relationship to any wider project or collaborative project and no part of it has been submitted for any other award.

Signed

Tom Fawcett

16th May 2006

Raw Data Archive

All raw data has been archived and stored. All 91 tape recorded interviews, verbatim transcripts and complete member checks are available to interviewees for perusal.

Confidentiality is respected and all names have been omitted from the thesis.

All NUD*IST data has been archived on CD rom and is available with respect to confidentiality.

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CHAPTER 1

RATIONALE AND INTRODUCTION

1.1 Rationale:

Mental toughness is arguably one of the most frequently used terms but least understood in applied sports psychology (Jones, Hanton, and Connaughton, 2002). In disciplines such as sport, adventure, business or lifestyle management it is considered to be a fundamental prerequisite if performers are to become high achievers (Goldberg, 1997; Kubistat, 1986; Lochr, 1982, 1986). Nearly twenty years ago, Gould, Hodge, Peterson and Petlichkoff (1987) emphasised that coaches considered that mental toughness was extremely important in achieving success.

In 2006 there seems to be widespread agreement on the importance and benefits of mental toughness, yet literature on mental toughness is characterized by a lack of conceptual clarity and consensus to its definition. Despite the concept being a popular applied sports psychology area over the past fifteen years there remains a need to fully explore the psychological concept in order to provide a more scientific understanding of the term based on systematic research techniques. Previous attempts to explain the concept have resulted in the use of synonymous terminology, which has only served to provide wide ranging and confusing explanations of mental toughness. There remains no clear conceptual understanding within the field of applied sports psychology as to what the term mental toughness actually is. Previous work is characterized by definitions and characteristics of mental toughness that are too wide-ranging to be of significant help to scientists and practitioners alike (Jones *et al.*, 2002).

Recent work investigating the important psychological characteristics and their development in USA Olympic champions (n = 10, and winners of 32 Olympic medals) their coaches (n=10) and significant others (n=10), found that such athletes were characterized by having high levels of mental toughness amongst twelve other

important psychological factors (Gould, Dieffenbach, & Moffet, 2002). Mental toughness was mentioned by over 73% of the sample as a crucial psychological characteristic linked to the development of potential Olympic champions. Yet the authors acknowledge that although athletes, coaches and significant others often talk about mental toughness, seldom is it precisely defined. They also state that the participants in the investigation were certainly not uniform in their views of mental toughness.

This study attempts to explore the perceptions of mental toughness of three distinct sample groups, these being adventurers / explorers, elite athletes and elite coaches, in order to gain a more scientific understanding of the psychological construct and to provide greater conceptual clarity for scientists and practitioners.

The attention that psychological preparation has received during the past twenty years has been reflected in published literature devoted to the topic (Suinn, 1986; Orlick, 1986; Nideffer, 1985; Bull, Albinson, & Shambrook, 1996; Goldberg, 1997).

Unfortunately, only one text by Hardy, Jones, and Gould (1996) concerns itself specifically with the psychological preparation of elite performers and attempts to explicitly relate current theory and research to personal understanding and experience with elite performers and coaches from a variety of sports. Moreover, the concept of mental toughness remains conspicuously absent. From a critical perspective the lack of scientific rigor that has been applied in attempting to understand mental toughness serves only to contribute to the general lack of conceptual clarity within the area.

The scientific literature available on the topic remains scarce and contains acknowledged methodological flaws (Thomas, Schlunker, & Over 1996; Fourie and Potgieter, 2001; Jones *et al.*, 2002). Only recently, more rigorous scientific attempts have examined the psychological concept (Middleton, Marsh, Martin, Richards, Savis

& Perry 2003; Middleton, Marsh, Martin, Richards & Perry, 2004; Bull, Shambrook, James, & Brooks, 2005). Such work is discussed in depth in chapter two when a review of mental toughness literature will be considered.

Because of the lack of alternative research approaches to provide evidence which furthers our understanding of the concept, the researcher feels that the current investigation is well justified in adopting a phenomenological approach in attempting to investigate the perceptions of mental toughness in adventurers / explorers, elite athletes and coaches from a naturalistic paradigm.

The investigation attempts to provide such conceptual clarity to what is still one of the least understood areas of applied sports psychology through more rigorous scientific research procedures. The investigation addresses fundamental issues, which remain unanswered in explanation to the question 'What exactly is mental toughness?' It will consider the possibility that the difficulty in the provision of a consensual definition of mental toughness and a general failure to operationalize the construct in a consistent manner lays in the possibility that it has *multiple* meanings and interpretations to different people. Through investigating peoples different perceptions from a qualitative approach the aim is to provide a more coherent understanding of mental toughness and to provide greater conceptual clarity to what must still be considered one of the most frequently reported psychological characteristics which determines performance success and failure.

1.2 Background to the study / Introduction

The researcher is a member of the British Olympic Association and a Registered and Accredited Sports Psychologist with the British Association of Sport and Exercise Scientists (BASES). It is through the association with such bodies that the background and rationale for the proposed research project began in March 1995.

In preparation for the 1996 Olympic games in Atlanta (USA) the British Olympic Association Coaches' Advisory Group (CAG) responsible for all disciplines were asked by the BOA Psychology Advisory Group (PAG) to identify areas of mental preparation which they rated as vitally important for future Olympic games success in Atlanta (1996). The coaching body rated the concept of mental toughness as the most important area of psychological preparation (above any other single quality) which given the opportunity, they would instil within each of their athletes prior to a major championship. Five Olympic squads (yachting, canoe slalom, track and field, canoe racing and archery) rated it the quality that distinguishes medallists from the rest. Sports psychologists within the psychology advisory group linked with elite squads reported that the quest for mental toughness remains an ongoing issue for many of the worlds leading athletes and coaches (BOA, Coaches Advisory Group meeting 7th March 1995).

Since the series of meetings in 1995 within the British Olympic Association, mental toughness remains on the agenda as a crucial performance factor that requires further understanding and development in applied settings. Yet, ten years and five and a half Olympic cycle's later (Atlanta 1996 to Turin 2006), mental toughness remains somewhat of an elusive concept. The question remains whether our athletes are in fact mentally tough enough to compete at the highest level? Is it the ones who return with the medals that in fact are able to demonstrate such desirable mental characteristics in competition, which serve to compliment and support their technical and physical skills?

Conversely, the lack of mental toughness continues to be a popular reason offered by athletes for disappointing performances (Backley, 1997, Equinox C4). It remains a readily available causal attribution for explaining success and failure, but it may not

always be correct to assume that those who do not achieve the ultimate prize are lacking in mental toughness. It may be that mental toughness is developed from being able to cope with previous failure and using such situations as positive learning experiences.

1.3 Implications for study design

Given existing understanding of the concept, there remains a need for further research to be conducted, particularly with elite coach and elite athlete sample groups to strive to increase our understanding of the concept. Results may allow sports psychologists to develop and design specific intervention programmes for athletes to improve their performances in top-level competition. However, clarifying what mental toughness is maybe needs to precede finding out how it may be developed and this research specifically addresses the former question.

In order to develop a broader understanding of what being mentally tough actually is within different social contexts and situations, it maybe necessary to investigate individuals who have been publicly recognised as mentally tough people, individuals who consistently demonstrate such desirable psychological characteristics in abundance. Personal characteristics of being mentally tough may be general and apply across different disciplines and situations, and not just in competitive sport. We may be able to learn more about the concept by studying individuals who readily display such characteristics and question them on how and when they display them. It is arguable for example, that those people who continue to persist in the face of adversity and refuse to give up, as in the case of adventurers and explorers, display incredibly high levels of mental toughness. The question must be asked, whether the degree of mental toughness required by athletes in sporting situations compares to more serious life situations and circumstances which require people to deal with

challenge and adversity, such as in adventure and exploration situations where people deal with life and death experience.

This research project will initially attempt to investigate populations through purposive sampling, similar to Kubistat (1986) who studied high achievers in the world of business, art, music and sport. This study will then attempt to investigate mental toughness from two different perspectives, elite sport and the world of exploration and adventure and let such findings emerge rather than propose hypotheses. There has been no previous attempt to investigate the perceptions of such populations on the topic of mental toughness and compare them with elite sporting samples. Jones *et al.* (2002) and Middleton *et al.* (2004) suggest that such elite samples should be targeted for investigation to further our understanding of the concept. The opportunity to possibly develop a broad understanding of the concept and then to share and transfer the knowledge and experience across athletic disciplines is very appealing.

1.4 Summary

This chapter has presented a rationale and introduction for conducting the investigation. This rationale is justified from a number of different standpoints. There is a lack of previous scientific research work conducted and published within the specific area of mental toughness within adventure and exploration and very little in sports psychology. Because of this, much of the previous work published remains questionable in terms of its scientific integrity and trustworthiness. Mental toughness has yet to receive a fixed, agreed and accepted explanation, which allows a clear conceptual understanding of the concept. Previous attempts, to explain the concept from the perspective of elite coaches / elite athletes have been fairly limited in terms of restricted sample selection of sports disciplines (Jones *et al.*, 2002) or do not

consider highly selective samples of medallist's, only contenders for medals (Fourie and Potgieter, 2001).

This study which adopts phenomenological method and grounded theory analysis challenges previous work and questions if a generalised operational definition is required or warranted as the concept is possibly capable of being interpreted in many different ways. Given peoples life experiences differ and the 'lived experience' within an individuals' social world is unique, the provision of an operational definition may not be the most appropriate way of explaining a concept which possibly has multiple meaning attached to it.

This investigation will consider a selection of discrete sample groups and involve purposive sampling. The research is directed towards adventurers/ explorers, elite coaches and athletes, and how they perceive and explain the concept. It adopts alternative phenomenological method and emergent grounded theory analysis in contrast to previous attempts to explain the concept. Such work employed the use of focus group / and individual interview (Jones *et al.*, 2002), written open ended statements (Fourie and Potgieter, 2001) and semi structured interviews Middleton *et al.* (2004).By investigating the concept from different perspectives (i.e. adventure / explorer, elite coach and elite athletes perceptions) and providing re-interpretation and understanding with increased conceptual clarity, it may increase our general understanding of the misunderstood psychological phenomenon and provide a foundation for further research to assist in developing mental toughness in the future.

1.5

A programme of research was formulated to address the following aims and objectives:

Aim

To investigate the perceptions of mental toughness of adventure/ explorers, elite athletes and elite coaches.

This will be achieved by satisfying the following objectives:

- 1. To adopt a phenomenological method through in-depth interviews to investigate the concept, which provides subjective interpretation based on the 'lived experience' of participants.**
- 2. To conduct purposive sampling on three distinct cohorts (adventure/explorers, elite athletes and elite coaches) with high sample integrity based on strict inclusion criteria.**
- 3. To integrate and apply interpretative phenomenological analysis (Smith and Osborn, 2004) and emergent grounded theory (Glaser, 1978) in order to formulate conceptual models that will contribute to a greater understanding of mental toughness. Subsequently, substantive grounded theories for each data set will be provided a re-interpretation of mental toughness to compliment existing research.**
- 4. To provide a critical review and evaluation of the research investigation.**

CHAPTER 2

LITERATURE REVIEW

2.1 Literature Review

The purpose of this chapter is firstly to provide a focused review of literature associated with mental toughness with emphasis on the two major areas of interest sports psychology and adventure / exploration. Secondly, it is to provide a critical evaluation of literature related to the appropriate research methodology linked to the needs of the current investigation.

It is commonly assumed that to perform at the very highest level in any area of life an individual needs to have an element of toughness. Obviously, different tasks demand different elements of physical, strategic, mental and technical application in order to perform them to the highest standards of excellence. The physical and mental demands placed on high level climbers compared to those of an international hockey player or an elite badminton coach demonstrates the point. In the world of sport most athletes and coaches now acknowledge that psychological factors make a substantial contribution to overall performance outcome. Williams and Krane (1993) report psychological factors are believed to account for between 40 and 90% of success in sports, with the contribution being much greater for elite athletes than for novices. They do not however explain the reason for such a variance or provide examples of sports in which psychological factors may well be responsible for 90 % of the performance success.

Selective sports psychology texts related to mental toughness lack any form of empirical support for the content included within them, and really only offer common sense explanations based on personal experience (Terry, 1989; Bull *et al.*, 1996). From a critical perspective, it seems that sports psychologists differ in their interpretations as to which personality characteristics, psychological skills, methods and strategies contribute to mental toughness. There is no accepted agreement on such issues, which

does little to establish professional consensus. It may be that mental toughness is both a personality characteristic, and also the ability to apply specific psychological skills, methods and strategies effectively in competition. Being the case, such a concept may be better considered holistically rather than as an isolated phenomenon which receives a rather narrow explanation.

Mental toughness like its physical counterpart may well involve a complex interaction of many factors, which contribute to the whole concept. There is also the issue that the term mental toughness has been confused with many other terms (hardiness, tough minded, resourcefulness) by sports psychologists, researchers, athletes and coaches, which creates a problem in providing consensus of opinion on a specific definition for the concept. This itself questions the need to offer a narrow operational definition if the concept is interpreted in such diverse ways by different people. Such a critical question has somehow been ignored in the past.

Mental toughness remains conspicuously absent within sport psychology literature. In a text specifically directed to understanding psychological preparation for sport and the theory and practice of elite performers Hardy, Jones, & Gould (1996) fail to make a single reference to mental toughness as a psychological concept. It may be mental toughness is rather abstract and not easy to define and explain.

The concept of mental toughness has previously been linked to personality hardiness (Kobasa, 1979, 1982). Unfortunately, Kobasa (1979, 1982) and Kobasa *et al.* (1985) concentrated work on hardiness within the context of the psychology of stress and illness avoidance and any transferable relevance remains questionable.

An attempt to assess the relationship between personality hardiness and sports performance (basketball) was performed by Maddi and Hess (1992). The authors hypothesized personality hardiness would show a moderate relationship to basketball

performance on the surmise that, the general outlook of commitment, control, and challenge would help in maintaining a motivational edge through which the demands of the game will appear manageable and the necessary decisive actions will be taken. Furthermore, players low in hardiness should be more likely to feel alienated, powerless and threatened as the demands of the game mounted. The study was completed with a limited sample group (37 males) from three high school varsity teams. There is concern about the choice of instrumentation employed within hardiness studies as it is not yet clear which method is the most reliable and valid assessment method of hardiness (Allred and Smith, 1989).

In a British investigation Golby and Sheard (2004) examined the potency of personality style (hardiness) and mental skills (mental toughness) in the prediction of success. Using three different levels of Professional Rugby athletes they found that international performers scored significantly higher than the other two groups in all three hardiness subscales and two of the seven mental toughness sub scales (negative energy and attention control). However, caution has to be directed at the reliability and validity of the psychometric instruments reported in the investigation. Although the research did seem to indicate that mental toughness is more likely to be found in elite performers (international) compared than athletes at lower levels of performance (super league / division one).

Research on mental toughness as a personality characteristic has been somewhat limited. Mental toughness has been described as both a personality trait (Cattell, 1965; Kroll, 1967; Werner, 1960; Werner and Gottheil, 1966) and a psychological state of mind (Gibson, 1998). Although still open to debate, it seems that traits are much more rigid and enduring than dispositions which may be more akin to the typical responses. Traits would therefore be the deep-rooted primary characteristics as identified by

Cattell (1965). The trait – state debate on personality continues and Jones *et al.* (2002) emergent operational definition of mental toughness even includes reference to a *'natural or developed psychological edge that enables athletes to generally cope better than their opponents'* (p.209). This suggests that aspects of mental toughness may well be both inherited and capable of being trained and developed. However, there is less evidence available that provides precisely which psychological skills / characteristics are more capable of being trained and developed than others.

Developing enduring traits as opposed to training state like changeable characteristics within people may well demand different strategies and time frames for successful completion. Such important information would be useful for coaches working with athletes and attempting to develop mental toughness.

Previous work investigating Olympic champions (n=10) found that super elite athletes are characterized by: mental toughness, competitiveness, hard work ethic, high levels of dispositional hope, optimism and adaptive perfectionism (Gould *et al.*, 2002).

Olympic champions seem to have such dispositional characteristics in abundance, but such evidence requires more scientific support. It is also not known exactly how many of these desired characteristics lie within the athlete prior to their engagement within the sporting arena as opposed to the degree they are developed as a result of their training.

Overall, trait - descriptive sport personality research findings have been rather equivocal (Vealey, 1992) and Morgan (1980) critically reported, much of the research in this area suffers from methodological, statistical and / or theoretical problems and findings indicate no consistent results. Cattell (1965) although dated, suggests that mental toughness would be displayed through self reliance, realistic cynical behaviour combined with a tough, practical, masculine temperamental dimension. Such

stereotypical and arguably contentious assertions are challenged by critics of trait theory. There is no empirical evidence to prove that males hold the monopoly on mental toughness characteristics and females may be just as likely to be mentally tough as their male counterparts. The recent 2005 successes of Dame Ellen MacArthur and Carrie Ford who respectively successfully navigated the fastest ever trans-globe sailing record and achieved fifth place in the Grand National Steeplechase seem to challenge such stereotypical assumptions very well.

When considering the world of adventure and exploration individuals such as Ellen McArthur, Joe Simpson, Ranulph Fiennes, Simon Yates, Alan Hinkes, Chris Bonnington, Mike Stroud, Chay Blyth, and Reinhold Messner all seem to have displayed typical tough minded characteristics. All have been subjected to experiences which have tested their mental and physical resolve beyond what may be considered 'normal', subjecting themselves to the most demanding and arduous life threatening environments and defying death in miraculous ways (Simpson, 1988; Bonnington, 1981; Fiennes, 1993; Stroud, 1993).

Unfortunately, others such as Peter Boardman, Joe Tasker, Julie Tullis and Alison Hargreaves (renowned climbers), who have been described as possessing such traits have not been so fortunate, and lost their lives during adventure/ exploration experiences. The bottom line being, people who are incredibly mentally tough do fail, but in hostile environments the consequences are fatal. The literature, which deals with adventure and exploration, is littered with sorrowful accounts and personal disasters of those who lose in Simpson's (1993) words the '*Game of Ghosts*'. The names of Mallory, Haston, Boardman, Tasker, Tullis and Hargreaves are etched in the memory of many mountaineers as icons of tough poise (Bonnington, 1981; Simpson, 1988, 1993). But, is there a personality type that is best suited to survival in

specifically demanding situations? More often than not, such situations require the element of coping with high degrees of physical and mental adversity.

There are examples of specific situations when physical reserves seem to have been totally depleted and humans have defied physiological laws of survival. In some way a person's mental reserve has provided the link to survival and allowed them override physical discomfort. Although it continues to be an equivocal and debatable issue, it has been proposed that by virtue of specific aspects of their personalities, some people are better suited to dealing with stressful life events than others, due to their personality hardiness (Kobasa, 1982). It may seem that engaging in a life threatening activity such as high level adventure is more likely to be classified as a stressful life event than compared to competing in elite sport which generally provides little danger or threat to one's life.

The control factor is viewed as being vitally important and is expressed as a tendency to feel and act as if one is influential (rather than helpless) in the face of varied contingencies in life. It is based on the self-perception of belief, that one has definite influence over events through the exercise of knowledge, skill, imagination and choice. Central to this is the aspect of an internalised locus of control. By internalising control it would more likely increase the chance that events would be experienced as a natural outgrowth of one's actions and not as foreign, unexpected and overwhelming experiences that are externally constructed. Faced with an external stressor, it is argued that a person with a strong sense of internal control believes that, through struggle, they can expect to have an influence on what is going on around them.

Over the past 10 years there has been increased interest in the concept of mental toughness with numerous sports psychology references advocating the associated

benefits to the possession of the elusive psychological phenomenon. Such work includes general texts devoted to developing mental toughness (Bull *et al.*, 1996; Goldberg, 1997), and more scientifically based evidence intent on advancing research understanding of the psychological concept (Gould *et al.*, 2002; Jones *et al.*, 2002; Middleton *et al.*, 2003, 2004; Bull *et al.*, 2005).

Previous attempts by sport psychologists contain widely different definitions and interpretations of the term. Such diverse attempts to operationalize the term have only served to confuse rather than clarify the concept. Additionally, many attempts to explain mental toughness lack empirical support. Literature which lacks such scientific evidence includes Lochr (1986, 1991); Bull *et al.* (1996); and Goldberg (1997) who advocate that it is possible to develop mentally tough performers and equip them with a superior set of mental skills. Attempts to define the term include: an ability to overcome / rebound from failure (Goldberg, 1997; Gould, Hodge, Peterson and Petlichkoff, 1987; Tutko and Richards, 1976); an ability to effectively handle pressure and stress situations (Bull *et al.*, 1996; Goldberg, 1997; Gould *et al.*, 1987; Williams, 1988). Provision of a clear and concise operational definition is problematic when diverse definitions are forwarded, which suggest the concept may be a multidimensional phenomenon. The apparent lack of scientific rigour that has been applied in many previous attempts to understand the concept may well serve to fuel the ongoing lack of conceptual clarity that surrounds the term.

Developing personal excellence on the road to success was the target of Kubistat (1986). It was a guide to psychological skills for high achievers in the fields of sport, business and the performing arts. The material presented is based on a series of interviews and observations with recognised high achievers in their respective fields.

No details are provided on the methodological procedures adopted within the work.

The concept of mental toughness is explained within a component model in Table 2.1.

Positive Experiences and Lessons from Negative Experiences
Purpose, Mission and Desire
Specific and Attainable Goals & Plans
Unwavering Trust & Self Belief
Relaxing, Pacing & Challenging
Focused & Sustained Concentration
Guts, Persistence and Desire

Table 2.1 Components of Mental Toughness (Kubistant, 1986)

Many of the components receive superficial treatment in terms of explanation and there is no coherent structure to the model or any attempt to explain how the selective components were determined. It is a collection of motivation, attention and confidence components together with appropriate planning and evaluation skills.

Kubistant offers little in terms of explaining the structure of the model or any precise operational definitions of the specific components contained within it. The reader is rarely provided with any real scientific justification for the material presented.

In a similar fashion to Kubistant (1986), Lochr (1991) talks in terms of “ideal performance states” and “the management of mental energy”. He adopts a pragmatic and action -oriented approach to understanding the concept and was initially a behaviourist, as he viewed the major components as directly observable and concrete features of performance. Much of Lochrs’ work concentrates on actions and responses and he firmly believes that mental toughness is an ability which comprises of skills that are capable of being learned. Basically Lochr focuses on the way athletes are able to respond in pressure situations and are able to stay relaxed, calm and energized.

Another major component of mental toughness that Lochr (*ibid*) identifies is that of confidence. True self-confidence is explained as a strong, positive, affective emotion,

nothing more than a specific state of mind (rather than a dispositional characteristic). According to Lochr, the key for mental toughness development is being able to control your confidence. There has been little attempt by psychologists to question the work of Lochr in terms of its reliability and validity, apart from Moran (1997), whose concentration work questions if such material is based on empirical investigation or other methodologically sound scientific procedures.

Bull *et al.* (1996) directly target mental toughness as a central theme, and forward a hypothetical mental toughness plan. They draw on their combined experiences as applied practitioners and reflect that mentally tough athletes tend to possess a number of highly desired attributes (see Table 2.2). Unfortunately; the attributes lack research support and any indication of which attributes deserve greater priority than others.

Mental Toughness Attributes

- ◆ A strong desire to succeed
- ◆ Staying positive in the face of challenge and pressure
- ◆ Being able to control the controllables
- ◆ High commitment and a balanced attitude
- ◆ High level of self belief
- ◆ Positive body language
- ◆ Overcome the fear of failure
- ◆ Develop superior mental preparation

Table 2.2
Mental Toughness
Attributes-
Bull, Albinson and
Shambrook (1996)

Over the past 10 years mental toughness has emerged as a new buzzword in sports psychology given the high profile it enjoys within coaching, the media and published literature. Goldberg (1997) provides a typical example offering a Ten-Step programme outlined in Table 2.3, which focuses on important sub components of mental toughness. A factor that both Bull *et al.* (1996) and Goldberg (1997) consider crucial to development of mental toughness is how people handle failure, how athletes fear it, explain and master it.

10 Steps from the Pits to the Peak

- 10 Insuring against future slumps
- 9 Becoming Mentally Tough
- 8 Building Self Confidence
- 7 Setting Slump Busting Goals
- 6 Developing Positive Images
- 5 Expecting Success
- 4 Dealing with your Fears
- 3 Developing Championship Focus
- 2 Establishing Self Control
- 1 Ruling out Non Mental Causes



Table 2.3 Goldberg (1997) Sports Slump Busting –10 Steps to Mental Toughness and Peak Performance.

There is a great deal of similarity and overlap to the themes offered by Bull *et al.* (1996). There is no doubt that dealing with a set back can be a valuable learning experience and athletes may well become better athletes as a result of learning from the experience, but the precise mechanisms that make people mentally tougher as a result of experiencing failure are not clearly established.

Sports psychology literature such as Goldberg (1997), Miller (1997), and Bull *et al.* (1996), fail to address the potential weaknesses and limitations of their work.

They offer material on the premise that if it worked for someone else then it has a very good chance of working for others, but with no guarantee attached. The texts are useful in the way they provide coaches with helpful frameworks for possible interventions and support for teaching athletes the basic mental skills.

From a British perspective, limited published research with elite athletes remains scarce (Jones *et al.*, 2002; Golby and Sheard, 2004; Bull *et al.*, 2005).

The general lack of clarity and precision surrounding the term mental toughness may be due to the lack of scientific rigour that has been applied in addressing the concept from a research perspective. It remains somewhat of an enigma and there are very few research studies that have attempted to investigate it. Only in the past five years have sports psychologists attempted to systematically address what must be a major gap in

sport psychology literature (Fourie and Potgieter, 2001; Jones *et al.*, 2002; Middleton *et al.*, 2003; Middleton *et al.*, 2004; Bull *et al.*, 2005).

Fourie and Potgieter (2001) performed inductive content analysis on 131 expert coaches and 160 elite athletes from 31 different sport codes. When analysing personal written statements the results identified twelve major components of mental toughness. These consisted of motivation level, coping skills, confidence, cognitive skill, discipline and goal directedness, competitiveness, possession of prerequisite physical and mental requirements, team unity, preparation skills, psychological hardiness, religious conviction and ethics. The coaches regarded concentration as the most important characteristic whilst the athletes regarded perseverance as most important. The findings offer an interesting cross cultural comparison to existing research, whilst also employing alternative methodology. The findings offer generalisations from numerous sporting disciplines and future research may need to consider inter sport differences.

A qualitative attempt to study the concept of mental toughness of elite athletes (n=10) was conducted by Jones, Hanton and Connaughton (2002). Ten international performers participated in focus group and in depth interviews in an attempt to investigate two fundamental issues. These being: How can mental toughness be defined? And what are the essential attributes required to be a mentally tough performer?

The resulting definition emphasizes both general and specific dimensions:

Mental toughness is having the natural or developed psychological edge that enables you to: Generally cope better than your opponents with the many demands (competition, training, lifestyle) that sport places on a performer'. Specifically, it is to be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure (p. 209).

Unlike Jones *et al.* (2002), Fourie and Potgieter (2001) did not propose a definition but suggested that further work is required to finalise a working definition of mental toughness. This research questions the need to offer any operational definition based on the nature of a naturalistic paradigm and the possibility of reality being construed in many different ways. The provision of any operational definition may well be dependent on the specific methodological approach which allows the possibility of such a definition to be constructed or accepted.

Basically, Jones *et al.* (2002) imply that mental toughness is derived from a combination of both genetic (natural) and learned (developed) characteristics which enable people to effectively adapt and cope with environmental demands. The natural characteristic (determination) seems to be less prominent than being able to demonstrate developed mental skills, such as being able to effectively cope with pressure situations and being in control, staying focused and having confidence. Attributes which emerged included self-belief, desire / motivation, dealing with pressure/ anxiety, focus (performance - related), focus (lifestyle related), and pain / hardship factors. The authors' state, that mental toughness provides performers with a psychological advantage over their opponents because of their superior self-regulatory skills. The authors acknowledge research limitations, which include the range and, number of sports sampled and the relatively small sample size (n=10). In addition by utilising one focus group that contained only three individuals was an acknowledged limitation. Such initial findings can only be viewed as preliminary evidence and further research is required.

Thelwell, Dalzell and Sadler (2003) noted previous research (Jones *et al.*, 2002) was conducted from a general as opposed to a sport-specific perspective. Adopting more of a sport specific approach Thelwell *et al.* (2003) investigated mental toughness in

professional football. A limited sample of six male athletes (mean age =28years) were interviewed in depth. The emergent definition supported the proposed definition of Jones *et al.* (2002), with a slight variance in that athletes considered that being mentally tough a player should 'always cope better' than their opponents with the demands of professional football rather than merely to just generally cope better. The findings identified four major qualities that all athletes acknowledged, these being, having total self belief at all times that you will achieve, having the ability to react to situations positively, having the ability to hang on and be calm under pressure and having the ability to ignore distractions and remain focused. Wanting the ball at all times (when playing well and not so well), knowing what it takes to grind yourself out of trouble and controlling emotions throughout performance were also substantive qualities identified by five of the six athletes.

Lesser important qualities included having a presence that affects opponents, having everything in control outside of the game and the need to enjoy the pressure.

Considering a sport specific approach is warranted, future research may wish to replicate such work in other disciplines. It seems that the major psychological constructs are gathering research consensus with slight variations apparent when sporting disciplines with specific demands are investigated. Thelwell *et al.* (2003) acknowledge research limitations in the small sample size, and the work failed to report how important aspects of trustworthiness were satisfied. Thelwell *et al.* (2003) and Jones *et al.* (2002) offer suggestions for future research, which include targeting not only elite athletes but also elite coaches. Secondly, future research should target not only international athletes but athletes who win medals and achieve the ultimate success. They state '*there may well be some subtle, but very important differences*

between mental toughness in the worlds best athletes compared to those that are "merely" very good' (p.216).

It is the intention of this research investigation to explore such lesser known areas of applied sports psychology and attempt to address a major gap in the knowledge and understanding of such an important psychological concept.

2. 2 The benefit of a suspended literature search within Grounded Theory research

Within a grounded theory research process, following the advanced development of a formulated theory, it is accepted that researchers revisit the literature in the field to explore how and where the work fits into existing literature (Charmaz, 2004). This suspension of searching key literature related to the nature of the inquiry avoids the researcher being open to any potential bias in considering and making connections between the real data and formulating potential conceptual models and ultimately theory development. Moreover, it is likely that more contemporary work will be available in the field and the researcher is then more able to compare and contrast their work with the most recent literature available. In this way the research work can accommodate the most recent findings and consider them in light of the current research investigation.

Such procedures were adopted within this study and during the final stage of the research process two credible attempts to understand mental toughness were reported by Middleton *et al.* (2004) and Bull *et al.* (2005). Both studies adopted qualitative research approaches. Middleton *et al.* (2004) attempted to conceptualise mental toughness and unearth an operational definition in a similar way to Jones (2002), but it targeted a purposive sample of elite athletes(n=33: 21 male / 12 female)

who themselves (n=15) were largely Gold Medal winners or World Champions. A similar grounded theory approach was employed to the present study in order to develop a theoretical understanding of the concept of mental toughness. However, Middleton *et al.* (2004) adopted semi structured interview technique to gather data. Their basic findings reported that mental toughness is largely multi- dimensional and consists of twelve components, including: self efficacy, potential, mental self concept, task familiarity, value, personal bests, goal commitment, perseverance, task focus, positivity, stress minimisation and positive comparisons. In an attempt to operationally define the concept the authors provided the following:

'Mental toughness consists of an unshakeable perseverance and conviction towards some goal despite pressure or adversity'.

Table 2.4 summarise the specific definitions attached to each of the major components offered by Middleton *et al.* (2004). The research signifies a major forward step in the development and understanding of mental toughness and will provide a sound conceptual model on which to compare the findings of the current study given the similarity of the research processes adopted in both research investigations.

The most striking feature of the research is the contention that mental toughness is strongly related to dealing with adversity. Middleton *et al.* (2004) offer a descriptive model as opposed to a prescriptive as the authors note that the research does not prescribe a set way to be mentally tough as athletes do not necessarily require all the twelve factors to be considered mentally tough. Athletes, depending on their specific sporting discipline and the task demands related to it, may well use different combinations of mental toughness characteristics.

<u>Mental Toughness Component</u>	<u>Definition</u>
Self Efficacy	The athlete's judgement or belief in his or her own ability to succeed in reaching a specific goal
Mental Self Concept	Viewing one's self as being mentally strong in relation to dealing with adversity
Potential	Believing that you have the inherent ability or capacity for growth, development or coming into being
Task Specific Attention	The unshakeable concentration of mental processes on a task whilst excluding other distractions from concentration
Perseverance	Persisting in or remaining constant to a purpose, idea or task in the face of obstacles, discouragement or adversity
Task Familiarity	Having a good understanding and being well acquainted with the task or adversity
Personal Bests	An internal motivation or drive to pursue personal best performance
Task Value	The quality of importance or the significance the successful completion of the task holds for the individual
Goal Commitment	The act of binding oneself (intellectually and emotionally) to a goal or a course of action
Positivity	The process of being positive in the face of adversity or challenge
Stress Minimisation	The process of reducing ones emotional reaction to adversity
Positive Comparisons	Sensing that you're coping better with adversity and thus have a psychological and competitive advantage over your opponent

Table 2.4 Mental Toughness components and definitions – Middleton *et al.* (2004).

Determining the level of contribution each component provides to overall mental toughness is an important future research question. Such considerations need to be addressed when sport specific research on mental toughness is conducted, as provided by Bull *et al.* (2005) when attempting to investigate mental toughness in Elite cricket. Bull *et al.* (2005) attempted to address two main objectives, 1) to develop a greater understanding of mental toughness specifically within cricket and 2) to identify how existing mentally tough cricketers developed their mental toughness. The second objective was similar to the Gould *et al.* (2002) study into identifying psychological characteristics and their development in Olympic champions. They attempted to locate important environmental, parental and socialisation influences which are primarily responsible for the development of individual mental toughness

characteristics. It adopted focused informal interviews (in depth) with twelve top level cricketers.

Findings were organised and reported into global themes under the three general dimensions of 'developmental factors', 'personal responsibility', 'dedication and commitment', 'belief' and 'coping with pressure'. Exactly how the global themes and general dimensions emerged from within the data is not explained in detail within the research paper. The general dimensions and global themes were outlined within a three tier pyramid structure so to provide some form of theoretical framework. This structural framework was based loosely on the three main themes of 'tough character', 'tough attitudes' and 'tough thinking'.

It is important to note that the researchers state categorically that the emergent general dimensions and global themes outlines within the framework do not represent new knowledge to sport psychology or contribute any new theoretical understanding to existing work in the field. Bull *et al.* (2005) when making this statement fail to acknowledge the work of Middleton *et al.* (2004), which provides a significant step forward in mental toughness research.

The work does provide partial support for the earlier work of Jones *et al.* (2002) and the findings provide similarities in that, components such as self belief, desire/ motivation, dealing with pressure and anxiety, focus(performance and lifestyle related), and pain / hardship are all supported.

Mental Toughness characteristics reported by Bull *et al.* (2005) associated with tough character; tough attitude, tough thinking and environmental influence are highlighted in Table 2.5.

TOUGH CHARACTER	TOUGH ATTITUDE	TOUGH THINKING	ENVIRONMENTAL INFLUENCE
Independence	Exploit Learning Opportunities	Robust Self Confidence	Parental Influence
Self Reflection	Belief in Quality Preparation	Over coming Self Doubt	Childhood Background
Competitiveness with Self & Others	Self set Challenging Goals	Feeding Off Physical Condition	Exposure to Foreign Cricket
Resilient Confidence	Never Say Die Mindset	Maintain Self Focus	Opportunity to Survive Early Setback
	'Go The Extra Mile' Mindset	Thinking Clearly	Needing to 'Earn' Success
	Determination To Make Most of Ability	Good Decision Making	
	Belief in Making the Difference	Keeping Perspective	
	Thriving on Competition	Honest Self Appraisal	
	Willing to Take Risks		

Table 2.5 Mental Toughness characteristics reported by Bull *et al.* (2005) associated with tough character, tough attitude, tough thinking and environmental influence

Although Bull *et al.* (2005) fail to acknowledge the Middleton *et al.*(2004) study, there seems to be partial support for some of the Australian data, and also some obvious differences.

Firstly, the Middleton *et al.* (2004) study did not include many cricketers (less than 3) amongst a diverse range of 21 sporting disciplines. If mental toughness has potential to have 'contrasting types' related to different sporting disciplines and be exhibited in very different cognitive and behavioural characteristics then it is not surprising the data from both samples differs.

Quite possibly the demands of the specific sporting discipline will determine the specific profile which is required to be mentally tough in that particular discipline. In agreement with Bull *et al.* (2005) the unknown complexities of mental toughness reinforce the conceptual ambiguity that exists when attempting to establish an all encompassing definition of mental toughness in sport.

Differences between the two studies of Middleton *et al.* (2004) and Bull *et al.* (2005) far outweigh the similarities between findings. Such evidence fails to provide research

confidence for any conceptual consensus of mental toughness, given both adopted qualitative research methodology based on emergent inductive analysis techniques. There seems to be an indication that a potential 'multiple reality' situation exists in relation to how individuals explain the concept of mental toughness when different / diverse populations and different sporting disciplines are investigated. Given the major studies conducted over the past 5 years there is more consensus to what appears to be the most important mental toughness characteristics when diverse populations are investigated, i.e. greater research consensus between Jones *et al.* (2002) and Middleton *et al.* (2004) as opposed to consensus with the work of Thelwell *et al.* (2003) and Bull *et al.* (2005). When more specifically focussed research targets distinct samples such as cricket or football then findings become equivocal. There is a need for future research to target more discrete athlete populations to further investigate the nature of the research findings.

This has obvious implications for the focus of the current study in that it attempts to explore mental toughness perceptions within three distinct sample groups.

Both the work of Middleton *et al.* (2004), Bull *et al.* (2005) and the present study attempt to understand mental toughness in similar ways but all apply quite different methodological approaches in contrast to previous work in the area (Fourie and Potgeiter, 2001; Jones *et al.* 2002). In both studies there were methodological limitations associated with the data collection techniques (open ended written responses and individual/ focus group interviews respectively in the above). In the Fourie and Potgeiter (2001) study written responses did not allow further probes and detailed investigation of data. Within the Jones *et al.* (2002) investigation, although adopting a qualitative approach to identifying major components of mental toughness and offering an operational definition, the work was very descriptive and lacked any

theoretical development. It did however; provide an improvement on the understanding of what mental toughness was at the time from a scientific perspective. The Middleton *et al.* (2004) study remains the most comprehensive work to date to provide a theoretical understanding of the elusive concept as it utilised in depth qualitative (semi structured) interviews of world class athletes (n=33), it also presented a descriptive account of the interviews and attempted to develop them into a multi-dimensional hierarchical model of mental toughness which was supported by theory.

When considering the findings of the present investigation the work of Middleton *et al.* (2004) will form a useful conceptual and theoretical model for comparison of data findings, in order to ascertain whether mental toughness has scientific support and commonality in similar research approaches but when employing different samples in terms of cultural and sporting populations.

This research project will also attempt to compare and contrast adventure/explorer, elite coach perceptions of the concept in addition to that of elite athletes. Locating literature which provides material for review from a coaches' perspective is difficult because of its scarcity. As reported earlier the work of Gould *et al.* (1987) initiated research interest in the need to consider coaches perceptions of the importance of mental toughness in the performance equation, but very little research has followed. For the purpose of this review, papers delivered by two top national coaches during the 1990's in swimming (Calleja, 1997) and rugby (Cooke, 1995) will be considered. The researcher acknowledges the limited scope of such a review and more published work is required from elite coaches on the concept to support informed debate.

2.3 Mental Toughness – A Coaches Perspective

'Mental strength is tangible. It manifests itself in the physical performance of athletes and it is a prerequisite for success at the highest level'.

Calleja (1997, p. 3)

As an elite coach Calleja accepts the term mental strength, favouring a holistic approach to training and believes that mental strength is a function of the correct approach to physical and technical work. For Calleja, mental strength is synonymous with mental toughness as many coaches use the terms frequently and it may well become a matter of semantics. He contends that the real issues involved in developing mental toughness are being able to handle pressure; the ability to cope with adversity; remaining focused; thorough preparation and quality training; effective goal setting and lifestyle management.

Referring to an Olympic event the coach states the difference between the top sixteen swimmers in physical terms will be minimal. However, those who perform best under pressure of the occasion will succeed.

Thorough preparation is viewed as critical to being able to handle pressure. The ability to handle pressure depends on self-confidence, and in competition confidence stems from the knowledge that the preparation has been as thorough as possible.

When athletes doubt their preparation they will doubt their ability to deliver on the day. Calleja believes that this is the source of inner confidence and great emphasis is placed on getting the preparation exactly right. Being consistent in the way competitions are treated also requires mental strength. Many athletes lapse within this area and some are not treated with the same importance as others.

In terms of mental skills, remaining focused on what is important over years of intensive training is what requires mental strength. Training focus is only one of the areas that must be maintained and quality training is a crucial issue. To train with

quality application and make sure it is consistent takes mental strength, particularly when training back to back (consecutive hard sessions). Training can be very repetitive and monotonous, particularly for endurance swimmers who can train up to and in excess of 50 hours per week.

An alternative view was provided by Cooke (1995) in a seminar paper presented on Mental Toughness for the British Olympic Association Coaches Advisory Group. Cooke managed the England Rugby Union team for over forty-nine international matches between 1987 -1994. Cooke (1995) outlined his view on the concept of mental toughness:

Mental toughness is the ability to operate effectively under pressure. It is the hallmark of any top class performer, that they consistently assess situations and react accordingly in the heat of battle. It is the unshakeable belief in ones own ability, tactics and colleagues. Mental toughness is a skill that can be developed.... we can always improve on our mental skills. There had however to be a degree of toughness already in place. It was not possible to create mental toughness, only enhance it (p. 18).

The elements that Cooke (1995) identifies as most important to mental toughness are concentration, confidence, positive thinking, fear of failure, and fear of inadequacy.

Within international competition the ability to '*not lose ones bottle was one difference between an international performer and an international competitor*' (ibld p.21).

Cooke (ibld) highlights the coaches' role in developing a mentally tough athlete. Five key factors were identified as priority areas for preparation: anxiety control, planning, technical proficiency, understanding and personal pride. Overall, he provides a mental skills approach based on personal reflection through years of experience to what an elite coach considers being the core components of mental toughness. This compliments the views of Calleja (1997), but from a coaches perspective it continues to remain an extremely misunderstood phenomenon because

of the lack of literature and scientific research dedicated to it. Both works lack scientific integrity and are based purely on personal opinion.

This section has attempted to provide a comprehensive literature review on mental toughness. Where appropriate, the review has attempted to adopt a critical stance from a scientific perspective questioning the nature of the work from theoretical and methodological standpoints. It is apparent that much of the work lacks scientific reliability and validity or trustworthiness from a naturalistic perspective. There would appear to be a dearth of scientific research, which investigates the concept from a phenomenological perspective.

Previous literature has provided widely differing terminology associated with the term mental toughness but the main criticism being; that nearly all fail to provide explanations of mental toughness, which are, based on systematic, coherent, and detailed research techniques (apart from Jones *et al.*,2002; Middleton *et al.*, 2004 and Bull *et al.*,2005). Such work only serves to provide definitions and characteristics of mental toughness that are lacking in conceptual clarity to be of significant help to scientists and practitioners alike.

Therefore, in order to fully understand the limitations of previous attempts to explain mental toughness it is necessary to consider methodological issues. From a critical perspective, the majority of previous literature on mental toughness lacks scientific rigour when attempting to investigate the phenomenon. Only work by Jones *et al.* (2002) and Middleton *et al.* (2004) specifically include general outlines of methodological procedures when investigating the concept, but all acknowledge methodological problems.

2.4 Critical evaluation of research methodologies in previous mental toughness research

The lack of conceptual clarity and research dedicated to such an important mental characteristic is somewhat surprising given the change of focus on alternative paradigms within the last fifteen years within applied sport psychology. Selected researchers steadily increased the number of published qualitative investigations (e.g., Cohn, 1991; Eklund, Gould, & Jackson, 1993; Gould, Finch, & Jackson, 1993b; Gould, Tuffey, Udry, & Lochr, 1996; Jackson, 1995, 1996; Jackson, Dover, & Mayocchi, 1998a; Jackson, Mayocchi, & Dover, 1998b) yet, none focused on mental toughness. Mental toughness research has been principally conducted by Thomas *et al.* (1996); Fourie and Potgieter (2001); Jones *et al.* (2002); Middleton *et al.* (2003; 2004) and Bull *et al.* (2005).

In an attempt to provide consensus of definitive terminology of mental toughness Jones *et al.* (2002) adopted a focus group technique and selective one to one follow up interviews. Fourie and Potgieter (2001) adopted a qualitative open ended written response approach which inductively analysed written statements from expert coaches and elite athletes, whilst Thomas *et al.* (1996) used a psychometric inventory to assess psychological and psycho – motor skills in ten-pin bowling performance. In consideration of the chosen method within this study both focus group technique and the use of psychometric inventory are not considered appropriate, as they are deemed incompatible with phenomenological inquiry.

Jones *et al.* (2002) state focus group techniques provide alternative methods in attempting to investigate, probe responses and elucidate detailed information, particularly when considering what may be viewed as a ‘new research’ question. In addition to using selective face-to-face interviews, Jones *et al.* (*ibid*) employed the use

of focus group techniques which were considered as appropriate for the investigation of personal constructs and meanings attached to mental toughness.

Focus group technique, although popular in other fields of research such as sociology and nursing (Holloway and Weaver, 1996) has not featured heavily in applied sports psychology. Focus groups attempt to tap into human tendencies, attitudes and perceptions relating to concepts (such as mental toughness) and are developed in part by human interaction (Krueger, 1994). The principal justification for employing the use of focus groups being they capitalise on the interaction within a group or collective activity to elicit rich informative data. Researchers actively encourage participants to share thoughts and experiences, ask questions, exchange anecdotes and comment on each other's experiences and points of view (Kitzinger and Barbour, 1999). Such methods are considered to have high face validity due to the opportunity for confirmation, reinforcement or contradiction within group discussion (Krueger, 1994).

Any form of method, which therefore encourages and allows subject interaction between several participants where collective thoughts are possibly influencing and contaminating another persons thinking and interpretation of their experiences cannot be considered compatible with phenomenological research method.

Focus groups may allow researchers to gain in depth and rich data through the use of participant interaction through the expression of common experiences in order to agree some form of group consensus on a broad question such as 'what do you consider mental toughness to be?' Such an approach, as employed by Jones *et al.* (2002) may offer collective interpretations of a social phenomenon, but if accepting that phenomenology thematizes the phenomenon of consciousness, and, in its most comprehensive sense, it refers to the totality of the lived experience that belong to a

single person (Giorgi, 1997), then the researcher rejects the particular method on the grounds of methodological incompatibility for justified inclusion within the current study.

The principle focus of this investigation was to adopt more of an individual, personalised and subjective approach such as in depth interview, which taps into and explores first person experiences without second person interaction. The main purpose of this investigation being to elucidate individual perceptions of meaning and to develop an understanding of the social phenomenon of what mental toughness is from the actors own perspective. The researcher is only interested in how the participants describe their world as experienced by the subject alone with the assumption that the important reality is what people perceive it to be, irrespective of what others explain it to be.

Because mental toughness is considered one of the least understood terms used in applied sport psychology it is not surprising that few attempts to quantify or precisely measure the concept have been conducted. There is to date, no reliable or valid instrument available, which has achieved psychometric scrutiny that allows mental toughness research from a positivist perspective to be conducted (Middleton *et al.*, 2003).

In an attempt to measure, psychological and psychomotor skills associated with prowess at ten-pin bowling Thomas *et al.* (1996) developed a 95-item instrument (The ten-pin bowling survey) which required respondents to report on the use of psychological / psychomotor skills during performance. The instrument included the general item of mental toughness as one of five essential psychological skills, but exactly how the authors selected and justified the eleven sub item factors was not reported and remains psychometrically flawed as a result. Also, any approach which

presumes what mental toughness is, despite no real conceptual understanding of the concept being available, is somewhat scientifically questionable.

It is also highly questionable whether a positivist, measurement-orientated and rule governed form of scientific method is suitable or appropriate for investigation of the emergent aspects of human cognition and behaviour such as differing perceptions of mental toughness. Given a naturalistic research paradigm is based on a distinctive set of ontological assumptions such as the recognition of different social realities and emphasis on subjective, insider perspective methodology such as inductive logical inquiry, the researcher views the naturalistic qualitative approach to be most appropriate and suitable for the current investigation.

This study's principle focus directs itself towards the initial conceptualisation stage of the research process into what is considered as a relatively new research question 'What is mental toughness'? (Fourie and Potgieter, 2001; Jones *et al.*, 2002; Gould, Dieffenbach, & Moffett, 2002; Middleton *et al.*, 2004; Bull *et al.*, 2005).

The author considers previous approaches to investigating mental toughness but is not satisfied with either the methodological paradigm adopted (Thomas *et al.*, 1996) or the chosen method (Fourie and Potgieter, 2001; Jones *et al.*, 2002). Recent attempts by Middleton *et al.* (2004) and Bull *et al.* (2005), which have adopted both grounded theory with semi structured interview and focused interviews respectively to study mental toughness provide more appealing research approaches which explore individual meaning attached to a phenomenon. However, the present study will adopt a fresh, alternative methodological approach which is deemed more suitable to answering the research question. It will employ phenomenological method together with emergent grounded theory analysis in order to establish a conceptual framework and theoretical model of mental toughness which advances existing understanding.

This chapter has provided a comprehensive literature review on mental toughness. Previous work has generally paid scant attention to gaining a scientific understanding of the concept and it is only in the past five years has mental toughness been empirically researched with any scientific rigour. The chapter has also attempted to provide a critical evaluation and consideration of previous research methodologies in an attempt to understand the concept. Such important considerations will form the basis of the discussion in the following chapter.

CHAPTER 3

METHODOLOGY

3.1 Methodology

Methodological rationale, justification and explanation for a Grounded Theory approach Investigating Mental Toughness

Grounded theory is considered an ideal methodology for the study of the perceptions of mental toughness for three main reasons. First, it is appropriate in research spheres that are difficult to examine with quantitative methods. Second, grounded theory is suitable when there is some published material in the area but lacking in research support and has no comprehensive theoretical research model related to it. Finally, grounded theory is particularly suited to the discovery of processes (Glaser, 1978, 1992, Strauss and Corbin, 1998). Although not widely employed within the field of sports psychology researchers have previously conducted qualitative studies based upon variations of the principles of grounded theory. Scanlan, Ravizza and Stein (1989a and b) simply described it as inductive content analysis, while Gould, Jackson and Finch (1993 c and d) termed it hierarchical inductive analysis. Grounded theory research begins with a research question minus any preconceptions. The researcher allows theories to emerge from the data, which is more likely to provide more meaningful theory in comparison to explanations based on personal anecdotes or prior assumptions (Bull *et al.*, 1996; Goldberg, 1997). A grounded theory approach is considered by the author to be highly appropriate in order to investigate such an abstract concept such as mental toughness, which is extremely difficult to quantify. Therefore, it may be considered to be part of individuals 'here and now' experience and in the large part phenomenological. Hence this investigation provides a unique approach to the study of mental toughness as it attempts to integrate emergent grounded theory with phenomenological interview technique in order to explore the nature of the phenomenon.

In an attempt to justify a methodological rationale for the study the researcher considered the need to satisfy a number of important criteria:

1. Does the methodological approach provide the opportunity for the researcher to gather and analyse rich qualitative data from a participant and *learn* from the participant how to understand a concept, process or situation? (Miles and Huberman, 1994).
2. Does the methodological approach allow the researcher to have simultaneous involvement in data collection and analysis phases of research? (Glaser, 1978).
3. Does the chosen approach allow for the development of emergent themes, concepts and categories from the data and provide an inductive theoretical framework in which to fully explain the concept? (Glaser, 1992).
4. Does the research approach avoid considering existing literature until after the data collection process has been completed in attempt to construct an emergent theory and avoid offering any preconceived hypotheses? (Glaser and Strauss, 1967).
5. Is the research methodology systematic in its procedures for data gathering, synthesizing, analysing and conceptualising qualitative data to construct a psychological theory? (Charmaz, 2001).
6. Does the research methodology provide an alternative approach to existing literature and findings on what is 'Mental Toughness'? Is it unique in its approach and potentially provide a significant contribution to literature available on what mental toughness actually is?

Table 3.1 Methodological criteria that need to be satisfied during the study

Apart from the final point (6) above, all the criteria for methodological justification and acceptance of a grounded theory study are important and need to be satisfied without violation. Additionally, the researcher was particularly intent on providing a unique methodological approach to compliment existing work in the area, which in many ways fails to satisfy explanations of the concept based on personal meaning and interpretation from a subjective viewpoint. To date, there are few explanations of mental toughness from a grounded theory perspective, although selective researchers have attempted to provide qualitative explanations using variations of what may be considered qualitative inductive analysis (Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*,2005).

The approach will avoid drawing upon other less scientific attempts to understand the concept as they are considered to be largely based on methodologically flawed investigation (Bull *et al.*, 1996; Thomas *et al.*, 1996; Goldberg, 1997), or to be methodologically incompatible when attempting to understand a specific research question (Jones *et al.*, 2002).

The nature of the research question is a major consideration when deciding to undertake a qualitative investigation. Research that attempts to understand the meaning or nature of experiences of people, such as exploring different perceptions of mental toughness involves field research. It aims to examine individual perceptions of events and seems ideally suited to grounded theory analysis (Strauss and Corbin, 1998). Such qualitative research is useful for exploring areas in which little is known or to obtain detailed knowledge about phenomena such as feelings, thought processes and personal emotions that are difficult to assess, extract or learn about through more traditional methods.

The naturalistic paradigm considers that the nature of reality is quite possibly multiple and given different situational experiences, capable of being construed differently by individuals. Given the research question is concerned with perceptions of mental toughness from three different viewpoints, this chapter attempts to provide a rationale (justification) and explanation of the research methodology.

This provides one of the main justifications for adopting grounded theory methodology, in that peoples interpretation and personal meaning may differ as to what mental toughness is perceived be, but this may also lead to understanding multiple layers of meaning attached to the explanation of the concept. Such layered explanations may consider how a person explains what mental toughness is, how it is displayed, and later on how it is developed, if it is transferable to other situations and

contexts and possibly information as to the consequences attached to being mentally tough. Basically grounded theory is about the study of meaning and the methodological process within this study is intent on considering thoughts (perceptions of mental toughness) in relation to the meaning attached to it by individuals from within three purposive samples.

There are multiple ways of construing reality and concepts and tenets of the naturalistic paradigm assume realities are holistic. It also assumes causal relationships cannot be determined, and that inquiry is not value free, but value bound. Individual perceptions of mental toughness may be influenced by previous experiences and the situational context of subjective experience. Entities are simultaneously shaped and the focus is more directed towards how people construe reality in different forms and attach different meanings to such reality. By taking such a stance which rejects objective reality in favour of subjective reality, it basically supports the view that people quite possibly experience, interpret events and place structure and meaning on them in different ways. It is quite plausible that adventurers / explorers, elite coaches and elite athletes in the current study may well offer different interpretations of what mental toughness means to them based on their prior experiences, age, gender, the nature of the sporting discipline they are involved in and many other possible personal, social and environmental factors. Indeed, it is also plausible that differences may exist within each discrete sample illuminating individual differences between individual interpretations of what mental toughness is perceived as.

It is with this important point in mind that the researcher also needs to carefully consider the most compatible and appropriate method (data collection tool) for collecting information rich data which will provide thick description and personal meaning from participants. Given that the research question is about attempting to

study the subjective personal meaning attached to perceptions of mental toughness the researcher has decided to adopt phenomenological interview method as a means of data collection. Interpretative phenomenological analysis (IPA) will be conducted within preliminary data to provide the foundation for later phase grounded theory analysis. An explanation of phenomenological method and the IPA will be provided in the following chapter.

This being a unique feature of this mental toughness study as no previous research has attempted to integrate phenomenological method with grounded theory analysis.

Middleton *et al.* (2004) adopted semi structured interviews and a variation of grounded theory analysis, but acknowledged that in data coding, categorisation and analysis that an array of established research findings (already available) directly influenced the formation of categories within his study. Within pure grounded theory analysis the origination of emergent themes, concepts and categories should emerge directly from data sources, although referential verification may be consequentially weakened as a result (Glaser, 1992).

This study will attempt to explore the personal meaning attached to the phenomenon via in depth interview and a first person perspective. This is where grounded theory and phenomenological method have a high degree of compatibility in that they allow for the phenomena to be studied from the 'lived experience', and individual consciousness to be explored for its uniqueness, therefore allowing for idiosyncratic differences to be explained in how people attach the meaning to their experiences or perceptions of events.

3.2 Adoption of a Grounded Theory approach within the investigation

The investigation attempts to adopt a slight variation of the grounded theory approach as outlined by Glaser and Strauss (1967) in which theory emerges and attention is on the data to tell its 'own story'. It focuses more on Glaser's (1978) version compared to that of Strauss (1987), whose version is more governed by rules, and specific scientific criteria linked to a paradigm model, hypothesis testing (prediction) and verification.

Over the past 15 years the original authors have debated the fundamental principles and operational properties of the theory within the methodological research process. Following the publication of Strauss and Corbin's (1998) theories and procedures text aimed at informing the reader to what they interpreted as the fundamental aspects of grounded theory, Glaser (1992) provided a detailed critique of their work and to date important differences exist based on epistemological and methodological chasms between the two approaches (Babchuck, 1996).

Glaser (1992) re-emphasized the need to consider grounded theory as a flexible approach, which is guided by, informed naturally emergent analysis without too much emphasis on rules and procedures within the research process. Moreover, Glaser (1992) adopts more of a naturalistic approach than Corbin and Strauss (1990), whose work sways more towards the positivistic doctrine in the sense they repeatedly emphasize the need for the theory to retain 'canons of good science', such as replicability, generalisability, significance and verification (Babchuck, 1996).

A major dichotomy between Glaser (1992) and Corbin and Strauss (1990) focused on the coding processes, which is central to grounded theory analysis. Specifically, Glaser (1992) was critical of the systematic guidelines offered by Corbin and Strauss (1990) within their coding procedures particularly within axial coding where he

argues it receives too much conceptual elaboration through adherence to an imposed coding paradigm intent on denoting causal conditions, context, action and consequences.

Basically, Glaser is interested in the generation of the theory and its development without any preconceived frameworks being applied which may be viewed as restrictive to the true-grounded theory that emerges from the data. Theory generation seems as crucial to Glaser (1978, 1992) as theory verification is to Corbin and Strauss (1990). The emphasis and need for constant hypothesis testing and validation of the theory by Strauss and Corbin (1994), particularly within later stages of coding is viewed by Glaser (1992) to be misguided as it may force the theory into what may be viewed as a 'preconceived framework' and as such the true emergent theory is severely restricted.

The researcher accepts more of a Glaserian approach within this study and intends to let the theory emerge without over emphasizing conceptual elaboration within the coding processes. The main purpose of the study is to let the research problem (investigation into perceptions of mental toughness) be explored and discovered with theory emerging as a natural by product of open coding, theoretical sampling and constant comparison.

Such a grounded theory approach basically involves letting themes, concepts and categories emerge or originate from the qualitative data. As the research progresses and it provides emergent codes, concepts and categories additional questions may be injected to further explore the phenomena. In essence the theory emerges from the data and at no time does the investigator attempt to impose a theory from other sources on to the data (Stern, 1980), a critical point previously directed at the work of Middleton *et al.* (2004). No prior conceptual framework or hypothesis is considered,

hence the need to avoid being drawn into seeking any differences within or between groups. In this investigation the focus of the inquiry is the concept of mental toughness and the researcher will allow whatever is theoretically relevant to emerge (Glaser, 1978). In doing so, the researcher will develop 'theoretical sensitivity' by attempting to commence the research with an open mind, with observations being influenced as little as possible by expectations based on existing material. The researcher has to develop an 'emergent fit' and modify categories to fit the emergent data as opposed to selecting the data to match the category. Grounded theory therefore both describes and explains the system, behaviour or mental concept being investigated and consequently becomes a method for developing a theory that is grounded in data which is systematically gathered and analysed (Strauss and Corbin, 1998).

Figure 3.1 (pp.49 -50) provides a detailed schematic representation of the grounded theory process of data collection and analysis conducted within the current study. Grounded theory ultimately attempts to discover how individuals define and explain, via their experiences and social interactions, their perceptions of what reality is (Stern, 1980). In this investigation the focus will be on the perceptions of what participants consider to be the reality of 'mental toughness'

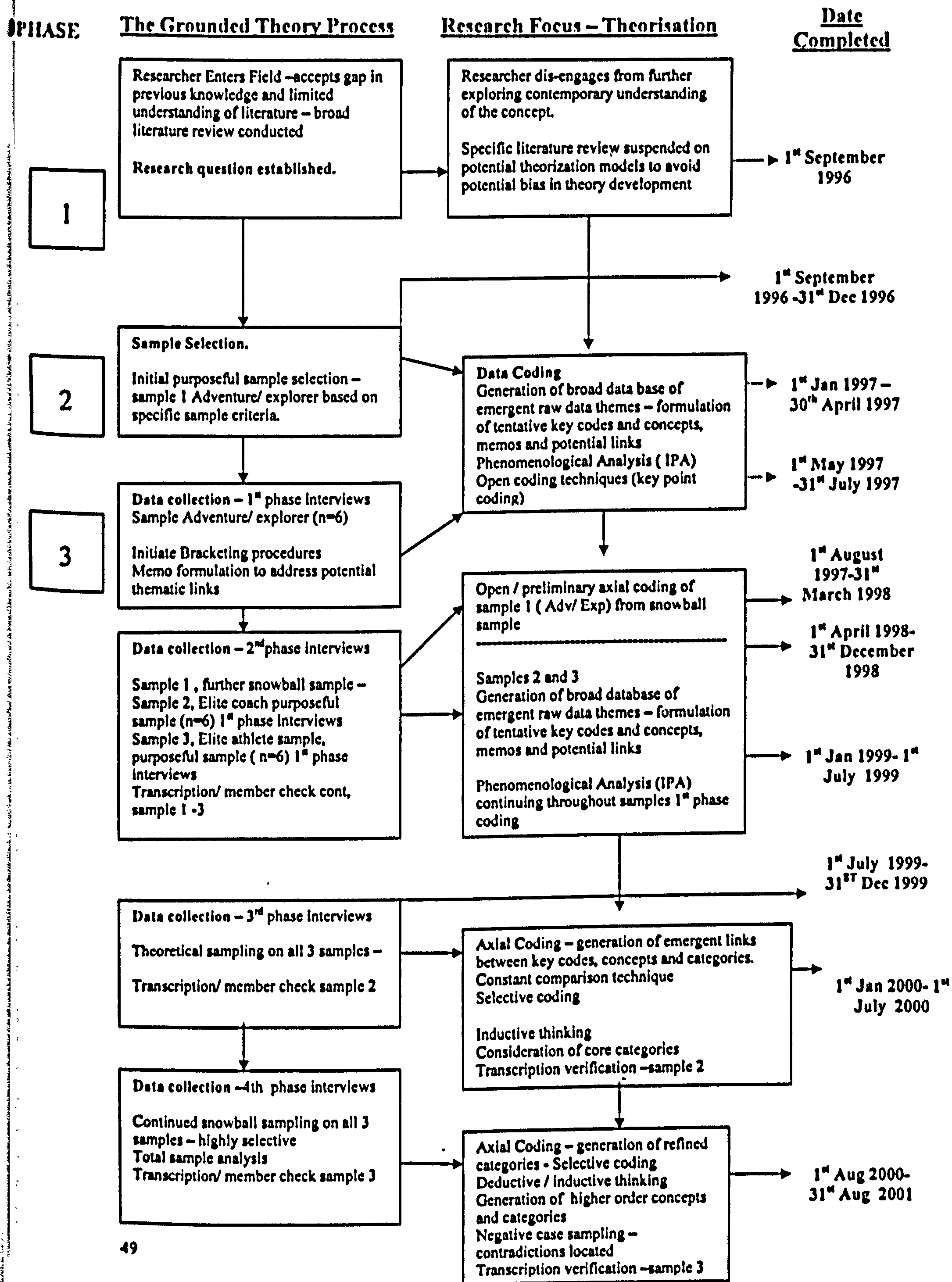
In order to provide some clear indication as to the research process and the magnitude of the project in terms of time allocation and allocated hours spent of different phases of the investigation Figure 3.1 provides a breakdown of the important phases of the study and indicates respective time spent on different phases of the investigation.

A central feature of grounded theory is ongoing comparative analysis, in that data collection and analysis may simultaneously occur throughout the investigation (Glaser and Strauss, 1967). The theory induced is conceptually dense and the theory has many

conceptual relationships, which emerge through descriptive and inductive and sometimes arguably through subtle deductive analysis. The major components of grounded theory originally outlined by Glaser and Strauss (1967) such as constant comparison, theoretical sampling and the coding procedures are important and salient features of the qualitative methodology.

Important methodological differences continue to exist between exponents of grounded theory research and are important when considering subtle methodological choices. The nature of the research question, naturalistic paradigm adoption and its congruence with the chosen method (grounded theory) is considered compatible as the data collection, theory formulation and on-going analysis may well be reciprocally connected. The process of asking questions and making comparisons are central to informing the researcher, guide the analysis and facilitate the theorizing process.

The research question attempts to investigate 'perceptions of mental toughness' in an open way to allow the emergent theory to account for the phenomenon as experienced and explained by the participant. As highlighted in Figure 3.1 the basic tenets of the grounded theory approach are schematically outlined. Within such a research process the data collection and analysis are combined which contribute to the 'groundedness' of the approach.



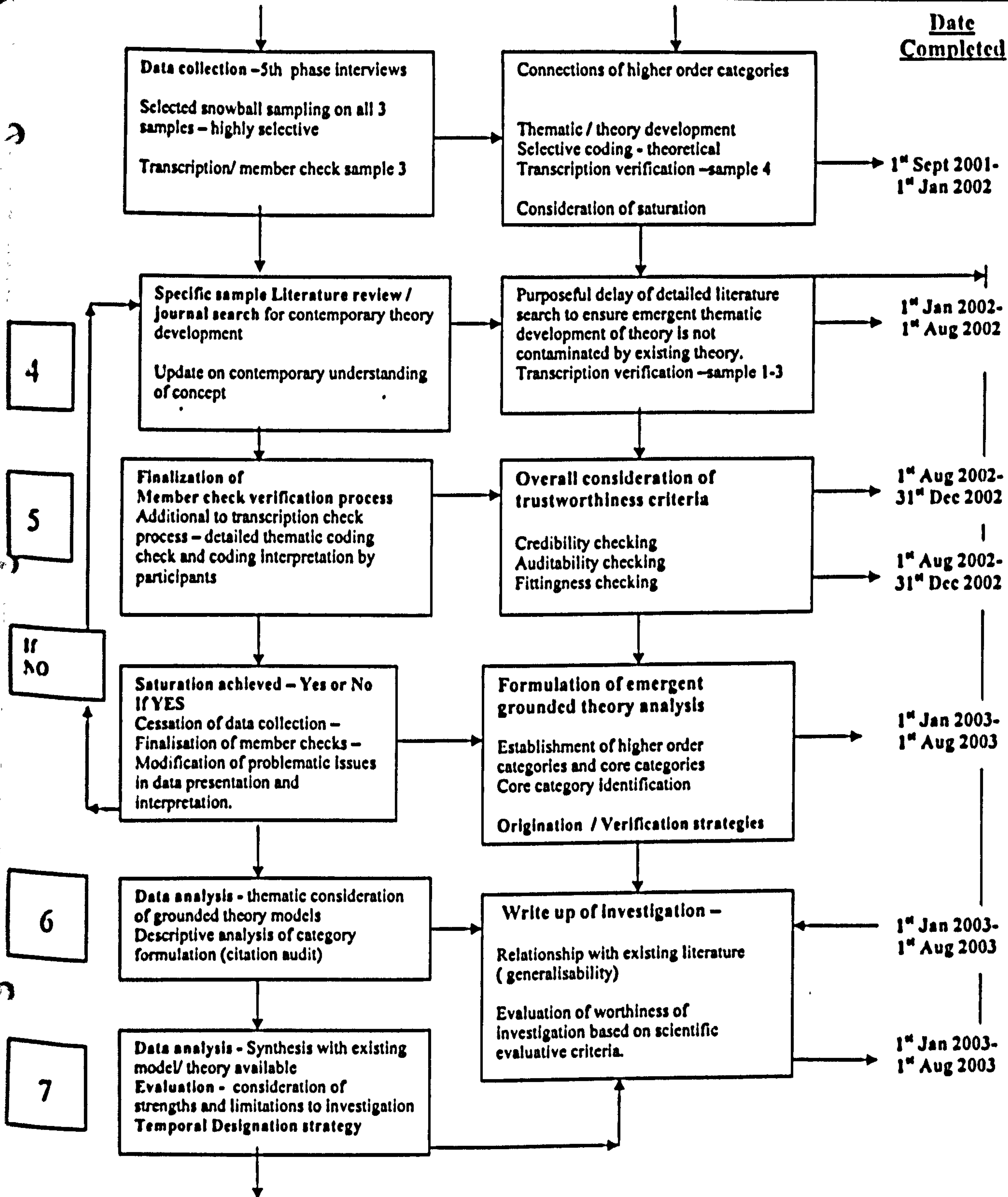


Figure 3.1- Schematic summary of the Grounded Theory Process conducted within the current investigation into perceptions of mental toughness.

The researcher enters the research field and accepts a gap in previous knowledge in an area which has limited understanding and scientific explanation (in this instance the concept of mental toughness) and establishes a research question (highlighted as 1 in Figure 3.1). Within pure grounded theory the researcher dis-engages from further exploration and contemporary understanding of the concept to suspend potential influence or future bias of potential theory development. At this stage the researcher may already have a fairly good understanding of previous theoretical models from literature which are based on less rigorous scientific investigation, but would be required to bracket such information to avoid theoretical contamination. In essence the researcher suspends any further literature search until the cessation of data collection and theory formation. It is a contentious issue as to when final literature sources related to the research question are located, consulted and compared to existing literature (Charmaz, 2001). Within this study final literature consultation will follow the development of the conceptual analysis of the data and the formation of the higher order theoretical categories (highlighted as 4 in Figure 3.1). This opposes the work of Middleton *et al.* (2004) who used categorisation components of origination, verification and temporal designation to establish mental toughness categories. This study will attempt to avoid certain origination procedures related to existing researcher thoughts and theoretical influences on category formation. The researcher will however adopt rational verification procedures to support concept and category formation. Rational verification involves the concepts and categories being formulated to have face value and logically connected to the concept / category label. Referential verification is when the concept / categories are suitably linked and supported by established research findings. Given the adoption of a Glaserian approach referential verification will only be conducted following the completion of

the conceptual and theoretical mental toughness framework as a result of data analysis.

Temporal designation refers to whether the concepts and categories are formed *a priori* or during data analysis and they emerge as a direct combination of the participant's responses and the researchers interpretations. In the former (*a priori*) method they are based on already existing research literature whilst the latter approach they are somewhat unique to the data being treated and would not be expected to fit in with existing predetermined concepts and categories (Miles and Huberman, 1994). This study will attempt to adopt the latter approach.

Careful consideration was also addressed to the selection of sampling procedures employed (highlighted as 2 in Figure 3.1). In order for concepts and categories to continually emerge during the data analysis, sampling is an important issue. This process continues until category saturation (highlighted as 3 in Figure 3.1). The study focuses on three highly selective sample groups in order to generate data. A decision to sample specific locale according to set criteria, known as purposive sampling was employed (Patton, 1990). The researcher feels justified in applying purposive sampling within the study on the premise that people who have demonstrated mental toughness as part of a 'lived experience' are more likely to provide more meaningful data than others who have not.

At the outset of a grounded theory study there should be no limits set on sample size, interviewees or data sources (Baker, Wuest and Stern, 1992). This study slightly violates the choice of interviewee criteria for grounded theory analysis in that it sets criteria for selection within each sample group and will only use in depth interview as a data source. The sample size continues until further interviews provide marginal returns on the existing data, or no new codes/ concepts/ categories emerge. The

sample selection is driven by the emergent data, which is continued to theoretical completeness.

As a result sampling within grounded theory investigation is considered 'theoretical' (Glaser and Strauss, 1967), as it is guided by emergent theory. The sampling in the current study is considered both purposive and theoretical, in that it is highly selective in order to achieve initial information rich data from participants. It also considers peer recognition and recommendation of additional potential rich informants as an additional strategy to provide continued information rich data, known as snowball sampling. The researcher acknowledges Patton (1990) who states: *the logic and power of purposeful sampling lies in the selection of information rich cases for in depth study* (p.169).

Theoretical sampling is basically data gathering driven by concepts derived from the evolving theory and based on the premise of making comparisons, the purpose of which is to locate people that will maximise opportunities to discover variations among concepts and to densify categories in terms of properties and dimensions (Glaser and Strauss, 1967, Glaser, 1978). It is considered important, particularly when exploring new or uncharted areas, such as mental toughness, because it enables the researcher to choose the avenues of sampling that can bring in the greatest theoretical return. Theoretical sampling is also cumulative, in that the sample generated builds from and adds to previous data collection and analysis. It may become more specific over time, because the researcher is guided by evolving theory. To enable concepts and categories to emerge during data analysis, sampling is continuous of specific and purposeful data sources until category saturation. No limits are set in terms of sample size and participants are selected on whether they fit the specific sample inclusion criteria.

During conceptualisation and categorisation within theory development it may be necessary to perform selective or discriminate sampling, which is again rather purposeful. Selective sampling is important when considering coding procedures when the aim is to integrate existing themes and generate further categories in order to formulate theoretical concepts related to mental toughness. Statements may then be validated, relationships between concepts may be explored, and further refinement may be pursued when necessary.

From a critical perspective the researcher considered the potential problems of integrating grounded theory and phenomenological method on the basis of later stage theoretical sampling technique. There is a potential danger of forcing the participant into dialogue which they do not enter into through personal choice, which would violate phenomenological method and this must be cautiously viewed as a potentially conflicting issue. However, the researcher attempted to use carefully selective elaboration prompts during interview sessions to explore emergent material as and when it emerges which is considered important for theoretical development.

Coding procedures (open, axial and selective) are essential within the grounded theory process, and in order to provide a solid foundation of meaningful data on which the grounded theory is based upon, the preliminary coding will involve interpretative phenomenological analysis. Such procedures will be explained in detail in the following chapter.

Following preliminary open coding, data is grouped together by means of constant comparison to form categories and sub categories in the form of axial coding. This process provides the researcher with insights into further data collection and more focused questioning. At this stage of the research project the interviews need to be carefully managed, and the emphasis shifts with phenomenological open questioning

technique being supported by more selective and focused interview prompts to explore conceptual and category relationships.

Checking theoretical construction against participant meanings of mental toughness is important to ensure research credibility. At an initial level as raw data extracts and key codes emerge (open coding), the theory constructed from incoming data is modified accordingly to further explore constructs. At a further level, when codes are emerge into conceptual clusters (concepts) they are verified through direct member checking procedures for their relevance to the participants meaning.

During a grounded theory investigation open coding is a continual process, which allows emerging themes to surface in the quest for category saturation (Glaser, 1978). As a general rule when building a theory, the aim must be to gather data until each category is saturated, or no new emerging themes are discovered. It may also be considered saturated if the theme is well developed in terms of its properties and dimensions demonstrating variation or the relationships among categories are well established and validated. During the course of open coding meaningful units are compared and contrasted as the data files emerge and similar phenomena are grouped together and preliminary or tentative categories are developed (clustering).

The process of relating categories to their subcategories is termed axial coding. Primarily it involves inductive thinking and also an element of deduction, in that the researcher searches data for verification of the data by asking questions and making comparisons.

Axial coding requires the analyst to ask questions of the data. When considering the responses to initial questions the researcher was interested in locating how participants described and explained 'what' mental toughness is and 'why it' should be perceived as a real phenomenon together with the underlying explanations and

reasons which support such views. Other questions guided by emergent narrative considered 'when' it was perceived to be important, in which situational circumstances it emerged, and 'where and when' it is most likely to be displayed. Additionally, the important consequences in terms of resultant outcomes attached to such considerations may allow the researcher to uncover the relationships between emergent categories. Such coding procedures provide the opportunity to develop emerging relationships and make constant comparisons within the data field to develop the emergent phenomenon.

Figure 3.1 demonstrates the inclusion and implementation of open and axial coding which needs to be applied at different stages of the research process. During the data coding phases axial and open coding are seen to be simultaneous as opposed to sequential acts. Open coding for additional properties whilst also developing relationships between concepts is a dynamic process. As interviews are being coded for meaningful statements and thematic relevance (e.g. self-confidence and belief) and an independent item does not closely relate to an existing code, it then becomes a unique emergent code to which further items may be closely linked.

On a critical note the researcher found difficulty in locating guidance from Glaser and Strauss (1967) and Glaser (1978, 1992) on concept formation. During open coding many different statements, codes and concepts emerge which support the developing theory, but there is a lack of guidance on how many are required before the next level is considered. How many statements of a similar nature are required for a substantive code to be recognised? What constitutes conceptual resonance in consideration of the least number of codes which may be accepted in order to form an emergent concept?

When conducting constant comparison, how many related concepts are required to form an emergent category? Such questions require careful attention when developing emergent-grounded theory.

The researcher decided to accept one significant interview statement as a potential 'key point' contribution within an emerging concept if salient enough. Similarly, having only one key point to support a concept (for example, 'self belief' and 'emotional control' within the elite athlete sample) was accepted as a substantive code if salient or it received numerous reinforcements from subsequent data coding. At the next level it was decided that two concepts or more would be required to form an emergent category, in that they would be required to demonstrate a connection or conceptual relationship, although if substantive and independent enough in terms of its density, one concept may well be considered to stand alone and contribute to the emerging theory. Grounded studies use data coding schemes to categorize emergent data rather than quantify it. Therefore, the number of times a raw data statement is cited is somewhat less relevant. The emphasis is on meaning and interpretation of data at the expense of quantification procedures, so it is the resonance of the material that determines its quality.

The ongoing coding procedures which are responsible for forming the emergent theory continue to the point of concept and category saturation where further attempts to collect unique data only provide marginal return. It is at this point where the data analysis is considered for theoretical verification to any existing findings and the study is also critically evaluated in terms of its credibility and trustworthiness.

3. 3 The need to establish trustworthiness within Emergent Grounded Theory (EGT) investigation.

In any naturalistic research investigation the issue of trustworthiness is of paramount importance. Satisfying trustworthiness criteria are as important to qualitative studies as issues of reliability and validity are to positivistic research investigation.

Specific trustworthiness criteria which need to be satisfied include credibility (internal validity), transferability (external validity), dependability (reliability), and confirmability (objectivity), which all contained various sub criteria identified in Table 3.2. Lincoln and Guba's (1985) proposition essentially constructs a method of ensuring that one can perform the research process correctly. Trustworthiness is thereby conceived as a parallel perspective to the empiricist concepts of internal and external validity, reliability, and objectivity (Sparkes, 1998).

Alternative methods which compliment positivistic research within applied sports psychology have really only emerged during the past fifteen years. Scholars from the discipline of sociology have appealed to sports psychologists to consider more varied methods of research in order to expand 'ways of knowing' and understanding meanings attached to subject matter (Sparkes, 1998). As a result, issues of validity in qualitative inquiry generated concern in relation to standards of academic rigour within the research process. Such concerns with standards of rigour are evident in disciplines such as sociology and in health professions such as nursing and occupational therapy. Consistent with the state of knowledge in both disciplines during the early 1990's, Beck (1992, 1993, and 1994), proposed credibility, auditability and fittingness as three main standards of rigour that are common to qualitative methods in general. In an attempt to achieve further credibility the

investigator needs to carefully consider such criteria when adopting a grounded theory approach.

Trustworthiness Criteria for Qualitative research Inquiry	How criteria needed to be satisfied	Complete / Partial / Not satisfied
<u>Credibility criteria</u>		
Prolonged engagement	<i>repeat interviews-discriminate sampling</i>	PARTIAL
Persistent observation	<i>repeat observation/ data collection</i>	NOT
Triangulation	<i>additional researchers conducting data analysis / multi- method assessment</i>	NOT
Peer Debriefing	<i>Independent researcher required/</i>	PARTIAL
Negative case analysis	<i>seeking anomalies within the data sets</i>	PARTIAL
Referential adequacy	<i>via tape recorded and signed transcribed interviews</i>	COMPLETE
Member checking procedures	<i>via return of individual member checks / signed documentation to ensure correct interpretation of data transcripts</i>	COMPLETE
<u>Transferability criteria</u>		
Provide thick description	<i>provide full verbatim transcripts and member checks</i>	COMPLETE
Database for reader to judge transferability	<i>make available through audit check</i>	COMPLETE
<u>Dependability criteria</u>		
Achieve credibility	<i>see above section</i>	SEE ABOVE
Multiple methods	<i>not within the scope of this investigation</i>	NOT REQUIRED
Stepwise replication Inquiry audit	<i>not warranted Independent auditor of memos, research journal, transcripts, member check documents</i>	NOT REQUIRED NOT
<u>Confirmability criteria</u>		
Audit trail	<i>Access to data files and computer records</i>	AVAILABLE ARCHIVE

Table 3.2 Trustworthiness criteria for qualitative inquiry –Implications for the current investigation , adapted from Lincoln and Guba (1985).

Table 3.2 reveals how the research investigation attempted to address important criteria in order to establish trustworthiness. Given the adoption of phenomenological interview, subsequent interpretative phenomenological analysis (IPA), and later phase emergent grounded theory (EGT) analysis, it is extremely important to consider evidence of how the study satisfies trustworthiness criteria. Such evidence will now be discussed in terms of methodological evaluation.

3.4 Methodological Trustworthiness Evaluation

Credibility criteria

Credibility within the current investigation was achieved in a number of ways. Prolonged engagement was partially achieved throughout the study, as selective participants were re-engaged, forwarded member check documents to review and return. These contained specific 'direct quotation' examples of their transcripts (see Appendix 2, Volume 2). If more follow ups were conducted with participants it may have significantly contributed to the selective coding process within theoretical development. However, prolonged engagements were difficult to perform due to participant availability and a decision needed to be made to secure new participants in order to explore further conceptualisation. The researcher identified potential conflict with theoretical sampling in later stages of emergent grounded theory and the use of a phenomenological interview which should attempt to employ a neutral questioning technique that is participant driven, not research driven. This was acknowledged as a conflicting issue within the integrated research design.

Trustworthiness within the current work could have been improved with additional triangulation. Triangulation is frequently mentioned as a method of enhancing the credibility of data and there are numerous ways of achieving this. Investigator triangulation was only partially achieved, in that supervisors were used initially to

consider findings and provide objective feedback for consideration of refining concepts and categories. From a critical perspective such work required more rigorous treatment and will be discussed in the critical review chapter.

To compliment such work the investigator conducted negative case analysis by examining individuals and themes, which did not seem to follow the general patterns of the group data. A practical example from the investigation demonstrates such inconsistency and contrasts the majority of the thematic findings. One participant was not fully convinced such a concept existed and seriously questioned its legitimacy:

I'm not at all convinced about that... I think it's a rather vague idea. I consider it to be a vague concept. As a concept it has no philosophical basis. I don't accept that people are mentally tough; I think that they are just different. They are different people dealing with different situations. (Adventurer/ Explorer 11)

When asked about describing possible mental toughness characteristics from personal experience the participant replied:

None whatsoever, as being absolutely vital! To come back to my original point, people cope differently at different times and in different ways with different things. The expedition was physically tough and enjoyable but I'm not sure there was mental toughness needed. Adventurer-Explorer 11

The negative case analysis suggested that mental toughness might be more influenced by the situation rather than personally driven. Further probing questions were included as a result to explore the possible situational link. This also provided a critical issue when performing IPA within first phase interviews in that a negative case may well be considered as valuable as opposed to dismissive data, indicating perceived differences on a conceptual level and may well be worthy of exploration to consider the issue in more depth.

Persistent observation (observing participants in different situational contexts) was not achieved and not warranted. However, prolonged engagement with participants through the use of follow up interviews may well have aided selective coding to

further probe participants on emerging issues. This must be acknowledged as a possible methodological limitation.

Peer de-briefing is a process of exposing oneself to a disinterested peer in a manner paralleling an analytic session for the purpose of exploring aspects of the inquiry that might otherwise remain only implicit within the inquirer's mind (Lincoln and Guba, 1985). Peer debriefing was only partially achieved by having a research supervisor provide feedback on the inquiry process. Project supervisors were consulted on important methodological decisions in data collection, collation and analysis procedures. The restricted use of an independent external checker, (peer debrief) and an auditor to provide outside confirmation of the investigators decisions made during the research process must be considered a potential limitation in achieving trustworthiness.

A particular strength of the current investigation was to provide participants with the opportunity to member check their results to ensure that interpretations were correct. All participants were provided with full transcripts of their interviews to check and return with any corrections attached (96 % of the entire sample completed returns). These remain available in a data archive.

Additionally, member check documents were provided to all participants, which contained specific examples of key coded data and concepts. These required precise checking to ensure correct interpretation of data coding categories. Over 90% of the total sample returned such documents with signatures to provide credibility (see Appendix 2, Volume 2 for an example).

Returning work to participants for their feedback on whether descriptions and interpretations of interviews of extracted data accurately reflect true perceptions and explanations within answers is viewed as essential to the research process (Dale,

1996). Dale states that: *Without this final step, the validity of the study remains questionable, and one can only hope that the researcher has captured the experience as it was lived (ibid p.313).*

As an ethical principle, member checks were deemed important as they confirmed accuracy as to what participants had said and that reality was correctly portrayed and recognisable to subjects in that they accepted that their comments were being represented fairly. The process is useful from a phenomenological point in that the researcher explores the reactions of the participants to his own interpretations of their world. The researcher is asking for confirmation that the interpretation is correct.

When attempting to establish credibility Beck (1993), suggests the investigator allows the participants to guide the inquiry process; check theoretical construction generated against participant meanings of the phenomenon and to use verbatim data in the emergent theory. Credibility also relates to how vivid the description of the phenomenon (mental toughness) is and this is best demonstrated when *'Informants and readers (participants in the study) who have had the human experience recognise the researcher's described experiences as their own'* (Beck, 1993, p.264). Such evidence provides a phenomenological link and the researcher feels the project achieved this very well.

In an attempt to enhance research rigour and credibility focus centred on whether explanations of mental toughness were accurately described and identified from the perspectives of the adventurers/explorers, elite coaches and elite athletes. When attempting to confirm if the phenomenon (mental toughness) was accurately identified and delineated it was vital for the participants to guide the inquiry process. In order to identify preliminary emergent themes (raw data themes) participants were asked two

fundamental questions with follow up elaboration probes. Details of such procedures are included in the following methods chapter.

The credibility of the research findings are also directly linked to the rigour applied within preliminary interpretative phenomenological analysis (IPA). The following example demonstrates raw data used to reflect the language used by the participants so the product of IPA (key coding) could remain close to the primary data. As shown the adventure participants introduced the themes of ‘dealing with stress, ‘pushing oneself to the limit’, ‘dealing with discomfort’, ‘coping with death’ and ‘being focused’ when describing and explaining mental toughness.

Direct Interview Transcript	IPA (Emergent Key Codes)
<p>Example 1 – Adventurer / Climber 2</p> <p><i>I think mental toughness is the ability to keep going under great and varied stress...as an example I think maybe the 1982 Everest expedition, both in terms of pushing myself to my absolute limit, and the physical discomfort. The two times we went up I got to my personal highest without oxygen.... I think it was also a wonderful experience. I was climbing with three people younger than me who were all focused. It worked as a team; we worked very well together and coping with the tragedy of Pete and Joe's death. That is the really tough thing, going and facing the parents and the girlfriends</i></p> <p><i>I would say the Olympic final in Atlanta. I think then it was mental toughness. I knew going into the final... I knew myself that I would get a medal of some colour but really I think that is the best example I can think of. In Atlanta I was extremely confident in my ability going in. Going in as the world number one, I knew only two guys that could beat me...</i></p> <p>Example 2 – Elite Athlete 35 -Swimmer</p>	<p>The participant perceives MT to be directly linked with ones ability to continue performing under extreme stress and such stress may be diverse from different sources.</p> <p>The experience required near maximum exertion (both physical and mental) that resulted in physical discomfort.</p> <p>The experience was perceived to be wonderful (exhilarating / memorable/) due to both the teamwork and the focussed abilities of the climbers involved to be able to tackle the task.</p> <p>The ability to continue despite having to cope with the death of a colleague was implied as being what the subject considered to be mental toughness.</p> <p>EMERGENT KEY CODES</p> <p>Dealing with stress / coping with physical discomfort/ coping with death/ being focused</p> <p>The participant explicitly stated the status of an Olympic Final was an antecedent of MT. The athlete perceived the ultimate self belief of knowing that a medal was probable as opposed to possible was a true indication of being mentally tough. Such high levels of absolute confidence of ones perceived ability provided MT to compete at that level.</p> <p>EMERGENT KEY CODES</p> <p>Confidence in Ability</p> <p>Self Belief</p>

Table 3.3 Thematic transformation using IPA within preliminary coding

The second example (elite athlete 35) resulted in two key coded themes from the IPA transformation, 'confidence in ones ability' and 'self belief'.

The data was then used to guide the inquiry process by further elaboration questions within the interview process, such as: 'What aspects of mental toughness do you think allow people to keep going under stress?'; 'What type of situation did you encounter in your adventure experiences that will help me understand what you mean by dealing with discomfort?' and 'For what reason is being extremely confident important to being mentally tough?'. As a result, further purposive interviews with additional probing questions in relation to content areas of the emerging theory were conducted. Such practice guided the inquiry process helped in making connections between codes and concepts and enhanced credibility. Such issues related to method will be further explained in the following chapter.

Overall, the main strengths of the research investigation in terms of credibility were the provision of referential adequacy and the degree of confidence in the member checking procedures. Limitations were linked to lack of triangulation, peer debriefing and prolonged engagement.

3.5 Transferability criteria

Transferability was achieved in the current investigation through the provision of thick description (detailed quotes from participants' data) in write ups, and also through the provision of a thick database via individual member check documents for the reader to judge transferability. The researcher must attempt to report the study in sufficient detail to permit others to decide on the quality of the findings (Patton, 1990).

Together with attempting to satisfy issues of credibility and auditability, the current research investigation also attempts to enhance 'fittingness' within the grounded

theory methodology. Fittingness is sometimes referred to as transferability and considers the possibility that the findings have meaning to others in similar situations. It has also been interpreted as how much the findings and propositions from the research fit into a context other than the one from which they were generated (Beck, 1993). The researcher accepts that grounded theory may well seek out such links, but critically questions this assumption given the principles of phenomenological inquiry and its philosophical stance. This provides another potential problem within methodological integration that was not originally identified. IPA is not overtly concerned with fittingness but more with independent contextual meaning from an 'insiders' perspective. It is not really assumed that meaning is transferable from a phenomenological perspective because it is so independently owned. Therefore any attempts at satisfying fittingness must be applied following conceptual convergence later in the analysis.

Fittingness may be achieved by demonstration that the research findings have similar meaning to others in similar situations. Direct quotations relating to specific emergent concepts and categories in the theory, were offered. For example, it emerged within the elite coach / athlete samples that perceptions of mental toughness are explained as a complex interplay of concepts and categories including, 'effective mental application', 'self confidence and self belief', 'motivation and commitment', 'dealing with event pressure ', 'dealing with stress and anxiety', 'physical coping ability' and 'training and situational considerations'. From within grounded theory fittingness would be assumed, but in contrast, if a phenomenological perspective was considered each interpretation would need to be fully explained from within the participants 'own experience' and this cannot be easily transferred to other settings.

This provides a subtle but important distinction to the two qualitative approaches and the questioning of meaning by different individuals in different contexts. This point is a central issue when considering integrating the two qualitative approaches in the consideration that mental toughness is capable of being perceived differently by individuals on a personal level, but on a more abstract conceptual level may well be considered to be quite similar. This explanation would seem to support the integration of the two approaches and allow the researcher to interpret the data accordingly.

In accordance with grounded theory methodology, literature was screened for reference sources which have included similar characteristics. It discovered support for some of the emergent themes in the preliminary findings of Jones *et al.* (2002); partial support was found for the work of Bull *et al.* (1996) and Goldberg (1997), who linked mental toughness with the 'effective use of mental skills'; Gould *et al.* (1987) and Goldberg (1997) for the 'ability to handle pressure', and Kubistat (1986) in having the 'ability to recover from setbacks/ failure'. Through highlighting such similarities within the current investigation and acknowledging that such relationships to previous theoretical constructs in literature exists, the possibility that potential transferability of mental toughness to other social situations may also exist, but requires further investigation.

3.6 Dependability / Confirmability criteria

This is partially achieved through credibility already discussed and also through the consideration of multiple methods of data collection, stepwise replication and inquiry auditing. The researcher did not feel multiple methods, stepwise replication or an inquiry audit were necessary or warranted, following discussions with supervisors.

Confirmability was achieved through the provision of an audit trail for access to data transcriptions, member checks and NUD*IST data archive.

Dependability was also satisfied in that the researcher has demonstrated competence, as the researcher has over 12 years experience as an applied accredited sports psychologist (BASES), and has extensive experience in interviewing both athletes and coaches on psychological aspects of performance and regularly discusses the concept of mental toughness with client groups.

Any study or investigation will ultimately have its own strengths and weaknesses and the researcher has to make a range of strategic choices about which trustworthiness criteria will be emphasized or attainable within the study (Sparkes, 1998). Given that, each study has a series of external constraints it is, *'almost impossible to fully satisfy all criteria and perfect studies are seldom if ever conducted'* (Hardy *et al.*, 1996, p. 266).

For example, within this investigation demanding extensive interview time with elite coaches and athletes during the preparation for major championships was not realistic and expecting prolonged engagement is almost impossible. The researcher was fortunate enough to have prolonged engagement with over a dozen athletes within the study due to work opportunities over the course of the data collection and analysis. Similarly, maintaining prolonged engagement with adventurer / explorer participants who are continually active and on location in diverse areas of the world is somewhat daunting to the researcher who requires a member check document and transcript to be meticulously checked and returned. Additionally, member checking by participants is a time consuming exercise and requires commitment to a project. Elite coaches and elite athletes have many demands placed on them. To expect a complete 100% return on member checks mailed out is rather ambitious, but ideally required.

The decision to adopt a grounded theory approach within the investigation has provided sound reasons for justification but also limitations and concerns within the research process and evaluation. These are summarised in the following Table 3.4. Overall, the researcher perceives the choice of methodology to be both appropriate for the research question, but also somewhat fraught with research difficulty. The table outlines the strengths and limitations of the chosen methodology. Careful consideration should be attached to the choice of methods which supports EGT and provides the data for the conceptualisation and theoretical development. At the outset the researcher should determine at what depth of meaningful analysis the investigation should attempt to achieve and this should itself determine the method of inquiry. To attempt an extremely detailed level of analysis with three large discrete samples was on reflection rather ambitious given the adoption of phenomenological interview technique and preliminary coding procedures.

STRENGTHS

- Satisfied 6 major methodological criteria outlined as prerequisites for adoption (see Table 3.1 p.41).
- Totally suitable for investigation of an abstract concept such as mental toughness within the naturalistic paradigm which has limited research support / scientific understanding.
- Accepts that in reality mental toughness may well be interpreted quite differently by individuals (possible multiple reality) and there is potential equivocal evidence for research consensus based on data from different samples, disciplines and cultures.
- Provides a first person perspective based on a 'here and now' experience.
- Provides a theoretical/ conceptual explanation which is derived from emergent data and not influenced by prior hypotheses or researcher bias.
- Challenges prior assumptions which lack credibility/ trustworthiness in explaining the concept.
- The methodological approach was capable of being integrated with IPA to provide more meaningful explanation to mental toughness than previously available, but only in early stages of analysis and it did create problematic issues in later stages of analysis due to concerns with theoretical sampling issues.

LIMITATIONS / CONCERNS & CRITIQUE

- Need to firmly establish early in the research process the chosen grounded theory approach to employ based on choice of Glaser (1978) 'emergent grounded theory' model or Strauss & Corbin (1990) 'theory verification' model as this directs the research process (hypothesis testing, sampling, coding, analysis and evaluation procedures).
- Difficulties experienced when attempting to integrate EGT and IPA within early phase data collection, coding and analysis procedures. The researcher felt that IPA would provide more meaningful data due to the questioning techniques and a deeper level of analysis within open coding processes to establish resonant key coded data. This provided limitations based on time due to the depth of analysis of transcriptions, data overload and member checking processes.
- Difficulty in discriminate sampling/ theoretical sampling procedures. The IPA interview technique is not suited directed/ focused questioning. It is in direct conflict with phenomenological tradition as the participant should guide the questioning process.
- Verification of the theory when adopting a Glaserian approach is provided through meaningful data which supports the emergent concepts and categories. As a result the theoretical framework which supports such a model may be seen to lack structure or sound scientific criteria on which to base the emergent theory.
- Too much data collected within the study. The study suffered from data overload due to the coding process employed. Attempting to integrate IPA on so many interviews only served to prolong the entire research process. As a result it provided an important lesson for future investigation (i.e. choose one approach and consider smaller sample with repeat engagements). Data saturation may have possibly been achieved earlier with repeat interviews.
- Most striking differences in mental toughness interpretations are located within open coding (key coded themes) and the more conceptual and category relationships are formed through emergent theoretical analysis the distinctness and diversity of such differences are less apparent. If true meaningful interpretative diversity is sought out on how people perceive mental toughness and reality is to be deeply explored the researcher feels that emergent grounded theory is effective in providing conceptual / category understanding but is restrictive in the provision of exploring meaningful themes in early phase analysis. Initial data is susceptible to being ignored at the expense of detailed analysis in favour of emergent conceptualisation. It was for this reason why the researcher attempted to integrate IPA within the study.

FUTURE CONCERNS

- Take a more critical approach to methodological / method choice. IPA may determine initial data themes and EGT may explore conceptualisation and possible theorisation of the direct meaningful IPA.
- Theoretical sampling is potentially flawed if the source of the question is a previous participant. It may be meaningless and not from the 1st person. Hence the need for repeat interviews.
- There is a lack of guidance on what constitutes conceptual and categorical resonance and such theoretical ambiguity requires the researcher to make difficult decisions during conceptualisation phase.
- Discriminate sampling and modified focused interview questions are essential to explore emergent theory in greater detail and establishing conceptual relationships.

- Possibly explore triangulation of methods within EGT to support the theory (Video observation of MT behaviour / personal diaries/ logs / autobiographical accounts).
- Include researcher triangulation within the coding and analysis procedures. Address identified trustworthiness flaws in the investigation.
- Creating a substantive theory within each sample only contributes to the formation a grand theory which itself is rather broad based to be of much meaningful use. Substantive theories stand alone and are meaningful for the sample they emerge from. Any possible transfer to other populations is not advisable.

Table 3.4 A summary of the strengths, limitations and future concerns of the chosen methodology.

The researcher feels the EGT has solid conceptual support through the detailed analysis but also feels that combining approaches introduced research difficulty which may have been avoided if only a single approach was adopted

The main purpose of employing emergent grounded theory was to investigate and challenge the unique nature of mental toughness as a psychological phenomenon and the researcher feels that the decision is justified. The potential limitations which emerge sometimes only become evident during the research process itself and are discovered in research hindsight.

3.7 Summary

When concluding their thought provoking paper on 'Issues of Qualitative Research and Presentation', Krane, Anderson, and Streat (1997) encouraged the acceptance of diverse methodologies within qualitative sport psychology. This investigation attempts to provide a fresh methodological approach which is an alternative to existing work on mental toughness.

This chapter has attempted to provide justification for the chosen methodology (emergent grounded theory). It has provided a comprehensive outline of the basic tenets of emergent grounded theory (Glaser, 1992) and identified the important stages

of the research process which the study attempts to adhere to. Figure 3.1 (pp.49-50.) provides an overview of the complete research process.

The issue of research trustworthiness was discussed with identification of important criteria in which the research process attempted to satisfy in order to achieve a high degree of credibility, transferability, dependability and confirmability (Lincoln and Guba, 1985). Finally, the chapter provided a critical summary of the main strengths and limitations of the chosen methodology with future concerns.

The focus of the following chapter will be to outline the choice of the most suitable and appropriate method which is deemed to be compatible with the chosen methodology. In addition to justifying the chosen method of data collection it will also focus on the data interpretation and evaluation processes.

CHAPTER 4

METHOD OF INVESTIGATION

4.1 Rationale and justification for the chosen method of data collection.

The purpose of this chapter is:

- 1. To provide a rationale and justification for the chosen method of data collection adopted within the study.**
- 2. To provide details of the nature of the data collection process (interview method, sampling and procedural issues).**
- 3. To explain how the data will be interpreted in relation to the adopted method.**
- 4. To provide an evaluation of the method of data collection used in the research paradigm employed.**

The decision to adopt a grounded theory approach to the study of mental toughness was principally made on the basis that it was unique in attempting to understand the concept in comparison to all previous attempts. Likewise, the decision to adopt a suitable method in relation to most effectively answering the research question is also based on providing an alternative approach to developing a deeper understanding of what mental toughness is and what it means to people. By doing so it attempts to make a substantial contribution to the existing research literature on mental toughness and add to the current level of scientific understanding.

When considering the choice of an appropriate method which is compatible with grounded theory methodology, it is important to consider a) the research question and b) how to most effectively explain it? This study is ultimately concerned with perceptions and meaning of what must be considered a rather ambiguous psychological concept. The researcher has established a number of important criteria which need to be satisfied in an attempt to choose the most appropriate method. These criteria are shown in the following Table 4.1:

1. It has to be compatible with grounded theory in that it allows data to be gathered in a way that meaningful themes and understanding emerge from the qualitative data.
2. It allows the researcher to develop an 'intimate relationship with the data' with the researcher becoming fully aware of themselves as instruments for developing a possible theory (Smith and Osborn, 2004).
3. It allows the researcher to *learn* from the participants on how to understand what mental toughness is about and what it means to them from the first person within their personal and social world.
4. It has to be able to provide information rich data, unique to the individual and exclusive to their life world, thereby providing a depth of meaning to a personal experience. It has to allow exploration of ones perceptions and personal experience and for them to be taken as real for what they are. It has to explore an 'insider's perspective' and attempt to understand the participants perspective (to take their side) and adopt an empathic hermeneutics approach. The method must be able to account for *first hand* experiences that can be described as close to the real event as possible (Conrad, 1987).
5. The method attempts to provide a 'new direction' in research understanding of mental toughness which has not previously been attempted through scientific investigation.

Table 4. 1 Essential criteria which guided the choice of appropriate method

Table 4.2 provides an overview of previous qualitative research in the past 5 years that has attempted to investigate mental toughness, and by considering such material a more informed choice to adopt a unique methods approach is available.

In consideration of previous research and attempting to satisfy the necessary criteria it was decided to employ in-depth phenomenological interview technique for the purpose of data collection. It was also decided to integrate interpretative phenomenological analysis (IPA) as a way of exploring and interpreting in detail how participants make sense of their personal and social world and fully explain their perceptions of mental toughness based on individual experiences, within preliminary phases of data analysis.

<u>Mental Toughness Investigation</u>	<u>Method Adopted / Form of Analysis</u>
Fourie and Potgieter (2001) (South African Study) Diverse sports targeted	Open Ended Written Statements (n = 131 coaches / 160 athletes) Content Analysis
Jones <i>et al.</i> (2002) (British Study) Diverse sports targeted	Focus Group Interviews / with selective in depth -individual follow up interviews (n=10) Inductive Thematic Analysis
Middleton <i>et al.</i>(2004) (Australian Study) Diverse sports targeted	Individual Semi –Structured Interviews n=33 athletes (21m,12f) n= 6 Coaches Grounded Theory Analysis
Bull <i>et al.</i>(2005) (British Study) Cricket Specific Study	Focused Interviews (Individual) n=12 Inductive Thematic Analysis

Table 4.2 Consideration of qualitative research investigations performed on Mental Toughness between 2000 and 2005.

The chosen method appears to satisfy all of the five criteria in Table 4.1. The approach being phenomenological in the sense it involves tapping into individual perceptions of mental toughness and their surrounding environment when people reflect on their personal experiences and inner world.

Phenomenology emphasises the different ways in which individuals construe the world. It is all about individual 'lived experience' and how people engage within the world around them. Given the nature of the current investigation and the focus of the research question (individual perceptions of mental toughness), a phenomenological perspective seems to be suitably appropriate.

It provides is a way of engaging questions about the meaning of experiences and concepts and requires the researcher to set aside presuppositions that are taken for granted in everyday life. A typical presupposition would be the generally accepted belief that mental toughness is a fairly widely accepted psychological characteristic that is required for top performance and its understanding and meaning to people is

fairly consensual. Another contentious presupposition would include that all winners are mentally tough and people who fail lack mental toughness. Phenomenological method would set out to question such presuppositions.

According to Husserl, the fundamental step in phenomenological research is the 'epoché'; a canceling out or "parenthesizing" of the presupposition that guides us in ordinary life. What remains, "within parentheses" or "under the epoché" is the "phenomenological residuum" of what appears in our experience (Giorgi, 1970, 1985).

In essence it is a search for personal meaning and how people make sense of their own world. It may be possible that the construct of 'mental toughness – mental weakness' is one that is used by people and accepted by them in the world of adventure / exploration and the world of elite sport. It may also however, be capable of being perceived in different ways by individuals in terms of what it means to them. Different situational circumstances may influence how people interpret the construct and gender, age and cultural differences may well exist, but have yet to be explored. It seems that it is possible because of lack of consensus within existing studies, that possible cultural variations of the concept may well exist (South African v Australian v British) and that 'sports specific' types of mental toughness based on different task demands are quite plausible (Fourie and Potgieter, 2001; Middleton *et al.*, 2004; Bull *et al.*, 2005). However, advocating such hypotheses need to be cautiously avoided in this study.

The current investigation is based on the belief that in order to fully understand mental toughness perceptions they must be viewed as an individual 'here and now' experience and therefore a phenomenological approach is deemed most appropriate. When accepting such a belief, mental toughness is considered subjective and capable

of being interpreted in many different ways; in that it has a multiplicity of meanings attached to its sense of reality and how it is interpreted and explained as a concept. If research supports such a belief, it may not be acceptable or appropriate to seek out research consensus and it may be more appropriate to accept that mental toughness is a phenomenon that is capable of being interpreted in many different ways by many different individuals based on a complex set of personal, social and environmental factors. In many ways mental toughness would be accepted as a truly multi-dimensional concept which has changeable characteristics depending on the person's interpretation of it, the sport they are involved in, the level at which they perform, their gender and a whole host of other factors. Put simply, what is perceived to be mentally tough and *real* for one person may well be quite different for another. The intention of such an approach is for the researcher to adopt a detached position where prior assumptions can be suspended. In this investigation the researcher attempts to suspend belief (due to experience) so that preconceptions and presuppositions about mental toughness are 'put aside' so the phenomenon or essence of what emerges is revealed in its true form. In this way the researcher has to 'wipe their mind clean' from prior beliefs.

Given that potential researchers' are not empty vessels, who lack prior experience, history or background in their chosen discipline; it is highly likely that they possess some knowledge of the area being investigated, which may colour their thoughts and ideas prior to investigation and analysis. It is the purpose of this study to accept that the researcher is required to dis-engage their current thoughts and meanings attached to such investigative areas to avoid possible contamination of data and adopt the phenomenological approach of Husserl when conducting in-depth interviews. This is also important when considering the adoption and integration of such a method

within grounded theory analysis, particularly during preliminary stages of data coding (IPA), when emergent themes for concept formation are being constructed.

The uniqueness of the proposed methodological and methods approach is a hybrid research design that the researcher has constructed for the purpose of the study in an attempt to best answer the question as to how perceptions can be studied and analysed. It attempts to integrate phenomenological method, IPA and emergent grounded theory in order to provide meaningful accounts of how individuals within three distinct samples perceive and explain what mental toughness is. Figure 4.1 provides a schematic diagram which shows the research process integration involving phenomenological method, IPA and the emergent grounded theory analysis.

The nature of the research question has direct influence on the choice of appropriate method. When considering how individuals perceive a particular situation or mental concept through prior experience or situations they are currently facing they need to make sense of their personal and social world.

The diagram shows that the adoption of phenomenological method has implications for the research process within the initial phase when considering how best to study 'perceptions of mental toughness'. Given that, the subsequent IPA concerns itself with cognitive processes and its main emphasis is on sense making by both researcher and participant means that it can be considered as having cognition as a central analytic focus (Smith and Osborn, 2004). The IPA is important to establish the meaningful foundation attached to the grounded data in preliminary open coding.

Such research procedures are unique in attempting to fully understand the concept of mental toughness from within qualitative inquiry.

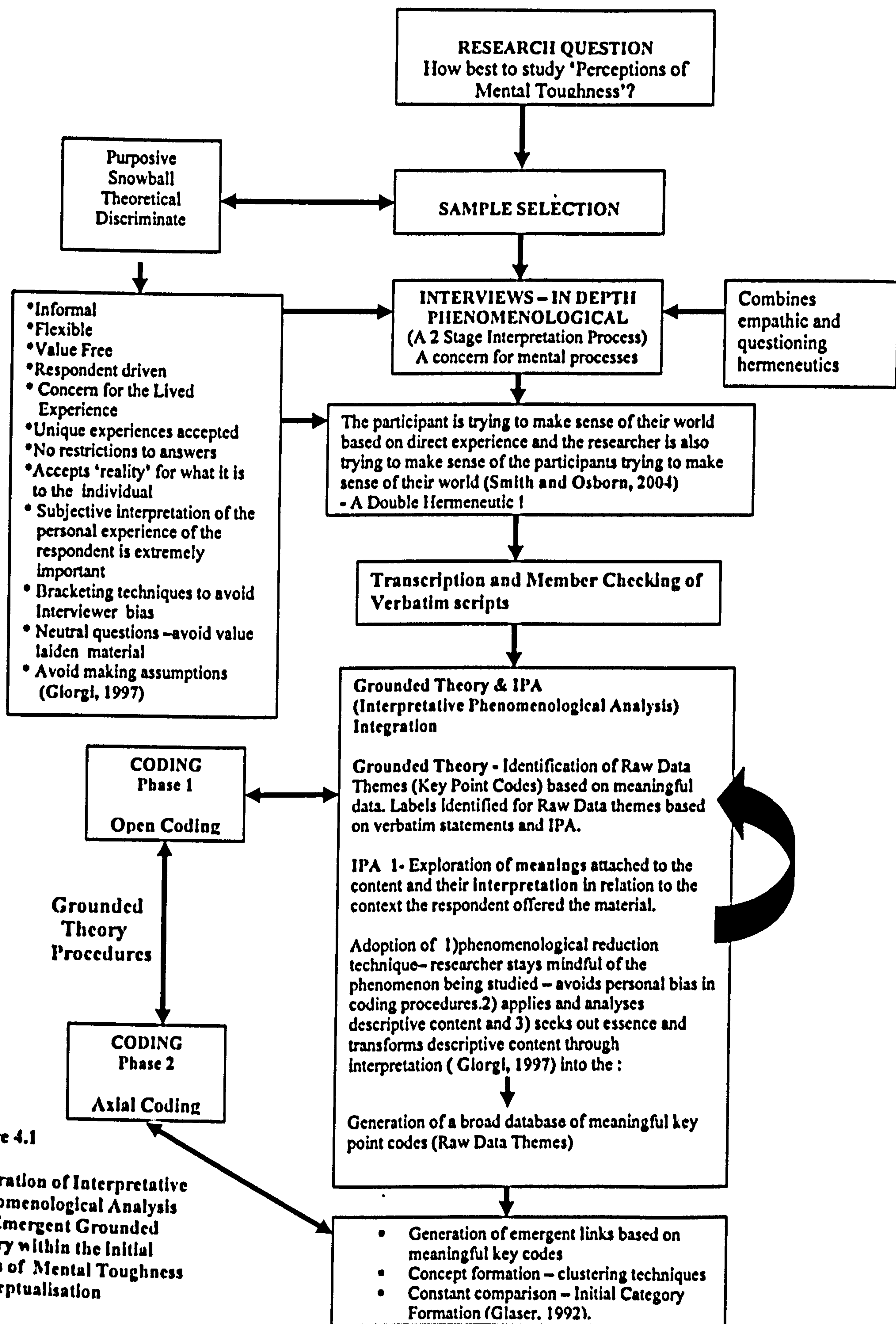


Figure 4.1
Integration of Interpretative Phenomenological Analysis and Emergent Grounded Theory within the initial stages of Mental Toughness Conceptualisation

Phenomenological method is considered extremely useful when a research question attempts to explore complexity, process or novelty (Smith and Osborn, 2004) and because mental toughness is now considered to be a complex multi-dimensional concept (Middleton *et al.*, 2004; Bull *et al.*, 2005) it seems highly appropriate.

In general, phenomenological research attempts to clarify situations lived through by the persons in everyday life. Its aim is to stay faithful to the phenomenon and the context in which it appears in the world (Giorgi and Giorgi, 2004). In order to achieve that, situations need to be found in which individuals have first hand experience and they can describe in detail what happened, what exactly took place, their thoughts, feelings and emotions which they experienced at that very moment. They need to capture as closely as possible the way in which they lived the phenomenon within the initial experience. In short phenomenological analysis attempts to discern the psychological essence of the phenomenon (*ibid*).

Phenomenology is ultimately concerned with uncovering and exploring psychological meanings attached to the phenomenon through investigating and analysing lived experiences. This aims of this research investigation are exactly that, in the way it attempts to explore perceptions of mental toughness through interviewing purposive samples about what they think mental toughness is based on their own direct lived experiences.

Giorgi and Giorgi (2004) state:

'The capacity to live through events or respond to different situations greatly exceeds the capacity to know exactly what we do or why we do what we do. Consequently, an analysis of the meanings being lived by persons from a psychological perspective can be highly revealing' (p.27).

This study will attempt to uncover the personal meaning attached to the concept of mental toughness through the employment of phenomenological techniques.

4. 2 Interview choice and justification

Given the rationale provided, it is decided that phenomenological in depth interview will be adopted for the purpose of the investigation. Within such interviews the interviewer is attempting to access an 'insider's perspective' and extract the personal meanings attached to it. Such interpretative activity is confounded by the researchers own conceptions as these are ultimately involved in trying to make sense of the respondents frame of reference. Hence this type of interviewing is considered a two stage interpretation process or a double hermeneutic (Smith and Osborn, 2004). It is explained in the following quotation:

'The participant is trying to make sense of their world based on direct experience and the researcher is also trying to make sense of the participants trying to make sense of their world' (Smith and Osborn, 2004,p.51).

The main concern is to understand what 'it is like' from the point of view of the participants. In many ways it can be considered empathic interpretative inquiry. From the researchers standpoint 'what do' and 'how do' participants perceive mental toughness to be based on their own direct experiences and their interaction with the world they live in. Basically, how is it perceived from within their own world? The researcher has to detach themselves from their own world and become empathic to the world as experienced by the participant in an attempt to understand their perceptions and explanations of reality.

The advantages of such forms of interview are that it allows the interviewer freedom to decide when and how to work and phrase questions on the topic as the interview progresses (Coolican, 1994). The approach allows flexible questioning, to enable the interview to flow more fluently, based on the responses from the interviewee. It retains the advantage of an informal approach by keeping the procedures fairly unstructured; it avoids asking pre-set questions in exactly the same order, but provides

interviewers with a guideline that allows topics to be covered in depth. It allows rich information to be explored and may include general and elaboration probes (Gould, *et al.*, 1993 a, b & c) as well as funnelling techniques which focus on more specific issues once a response has been offered. Figure 4.1 outlines the main characteristics associated with such forms of interviewing. One emphasis is on the search for aspects of the lived experience by the participant and the quest for narrative dialogue is important attempting to allow the respondent to control the discussion. The researcher acknowledges that such types of interview might create problems, if different wording is used to participants, and there must be consistency in procedures with participants. Important information may be missed, due to informality of the approach and there is a disadvantage as interpersonal variables could imbalance responses (Coolican, 1994). Unique experiences are accepted for what they are due to the interviewer avoiding letting presuppositions interfere. Reality is accepted for what it is to the individual and neutral questions avoid value laden material. Finally, assumptions are resisted in favour of empathic interpretation.

Open-ended interview techniques have been widely employed in attempting to explore and facilitate athletes' understanding of subjective sporting experiences (Gould, Jackson, & Finch 1993c, 1993d; Gould, Finch, & Jackson, 1993b; Scanlan, Ravizza, & Stein, 1989a, 1989b, 1991). However, very few attempts have been made to utilise phenomenological interview. Based on suggestions by Dale (1996) and Jackson, Dover and Mayocchi (1998a), this research study has developed an informal interview guide, comprised of a series of open ended questions which contain both general and elaboration probes (Appendices 1, Volume 2). It was informally presented and flexible enough to cater for the respondent to direct the conversation and guide the researcher into further questions related to the dialogue. Every effort

was made to avoid leading the participant in a direction he or she might not otherwise venture without certain probes (forcing the data). This is an important point when resisting the temptation to apply theoretical sampling without being first guided by the participant within interview dialogue. A contentious methods issue which surfaces when combining the two chosen approaches.

To compliment the open questions the interviewees were asked to consider a personal experience in where they have either demonstrated mental toughness or an experience in which they have observed it being demonstrated by others, in order to identify specific characteristics within its make up. Participants were requested to primarily draw upon their personal 'lived experience' for their information and it is essential the participant largely sets the tone of the dialogue during the interview (Dale, 1996).

Within phenomenological inquiry questions follow the dialogue of the respondent, aimed at learning more about the respondents experience as opposed to confirming any of the interviewers previously held hypotheses (Hanson and Newburg, 1992).

By not asking participants the same questions from a preconceived guide, it assumes all participants will find each topic unique to their experience (Dale, 1994, 1996).

What is relevant for one persons experience may not be at all relevant for another.

Within the current investigation it was decided, in order to allow that the experiences of the participants to be fully explored, the topic and context for the study should be first identified, and then for the participant to fully describe and explain that experience as he or she lived it. The questions that follow link the dialogue and contain probes and prompts when statements from the participant are somewhat ambiguous. Such prompting is descriptive in nature and phrased in the participants' vocabulary whenever possible in order to explore further meaning.

Given the initial description and explanation of subjective perceptions of mental toughness, the researcher framed and ordered subsequent questions, which reflected the participants own words and meanings attached within the responses. This attempted to explore and extract more in depth information related to emergent themes, which were being developed to facilitate the emerging grounded theory.

This is where the phenomenological interview provides meaning and substance to the provision of information rich data which supports the key point codes and ultimately the concept and category formation within the grounded theory analysis.

The meaningful foundation of material which underpins the grounded theory is provided by the quality of the data achieved through phenomenological interview method.

4.3 Integration of phenomenological method with grounded theory analysis

This attempt to integrate a form of phenomenological method with emergent grounded theory provides the researcher with difficult choices. By adopting such an approach how much is the interview guided by personal description of the experience (phenomenology) and at which stage of the data collection process is it guided by theoretical development (grounded theory)?

It is accepted that the type of questioning within research studies is influenced by the methodology adopted. The researcher accepts that this can create a methods dilemma, and although problematic feels that both phenomenological and grounded theory approaches require questioning that explores a person's subjective interpretation of a phenomenon. As a result the narrative derived from the participant perspective is required to allow the field of inquiry to unfold and be further explored.

The decision as to how long into the data collection process the openness of the phenomenological interview style continues being dedicated to the richness of the

experience, as opposed to the development and refinement of the emerging theory?

It was decided that for the purpose of this investigation the researcher will set out with basically a phenomenological approach (interview method) which is very open and direct experiences of all participants will be explored on a basic level as to what they perceive mental toughness is all about. Similarly, grounded theory also emphasises open interviews rather than specificity in the early phases of projects. It is not until the theory begins to take shape that focused questioning is required to account for exploration of salient categories (Glaser, 1992).

In this study, phenomenological interview method will provide the preliminary data for subsequent analysis (IPA) and when it is deemed by the researcher that enough salient themes have emerged, further exploration will follow. The researcher will introduce further questions to participants when and only participant responses allow the opportunity for research elaboration. It is likely that new concepts will emerge during interviews and take the researcher into more open ended discussion and a return to more phenomenological inquiry. The interviews at later stages of the inquiry will eventually become more focused when opportunity allows such exploration.

Therefore the proposed integrated research approach although contentious and potentially problematic, may be viewed as a process which begins in an open ended, broad manner seeking the participant's point of view on the phenomenon. It then proceeds with on-going data analysis (IPA), which provides emergent tentative theory in which key codes, concepts and categories provide potential focus for subsequent interviews. Subsequent interviews consider the possible relationships between such concepts and categories and emergent grounded theory develops.

From a grounded theory perspective, the continual analysis influences the salience of subsequent questions that are asked with the direction of the interview ultimately

being driven by the emerging theory. This is considered theoretical sampling in that the analyst jointly collects codes and analyses data and then decides what data to target next given the existing theory (Glaser, 1978). This is akin to what is regarded as funnelling technique within phenomenological method (Smith and Osborn, 2004), when shifting from general descriptions to more specific concerns elaboration or more focused questions may be offered to respondents. Within all interviews, the fundamental questions were forwarded and as existing categories repeatedly emerged, they were specifically used as a focus for follow up questions. As new categories emerged, the initial open-ended approach was adopted to reflect a broad outline of the concept, which then would be more sharply focused on salient emerging themes. Such analysis leads to the emergence of a tentative theory. This analysis guides later interviews to questioning possible relationships between categories and the theory is developed. In doing so, it is intent on achieving saturation of emergent categories and formulation of higher order themes and general dimensions. The researcher acknowledges this investigation may slightly violate pure grounded theory method where the exploration of the social situation may require diverse data collection methods and also it may violate pure phenomenological method intent on providing a rich and personal account of the total 'lived experience'. However, the researcher feels justified in the adoption of the chosen method based on the nature of the investigation being that of exploring individual 'perceptions of mental toughness' and revealing the meaning attached to the phenomenon.

4.4 Sampling issues

The adoption of phenomenological method within an emergent grounded theory investigation provided problems not only with sample size but also the use of prolonged engagement (repeat interviews). Within this study repeat interviews were

not guaranteed at the outset and small sample numbers without prolonged engagement would not produce the emergent grounded theory to saturation. The general guidelines for phenomenological studies are that samples should be small due to the case by case analysis format (Smith and Osborn, 2004). However, this study is not a pure phenomenological investigation, it is merely adopting aspects of phenomenological inquiry (interview technique and specific aspects of analysis which assists in extracting meaningful data to support grounded theory data). It attempts to develop an adaptation and integration of two major qualitative approaches and merge them in order to extract meaningful data and provide a conceptual understanding of mental toughness which has an underpinning of theoretical support. As a result sample size will be decided based on grounded theory guidelines and the fact that prolonged engagement with participants will be difficult, which itself provides an acknowledged methodological limitation.

4.5 Sample selection – provision of a rationale

Before explaining the criteria for sample inclusion it is important to provide a rationale for the sample populations irrespective of sample size.

Given phenomenological interview was the chosen method it directs itself to first person experience. It attempts to discover the personal meaning of the experience as a lived experience. What is real for that person is unique and exclusive to their own world. Meanings attached to such experiences are only really fully understood by the person who lives the moment and their personal experiences are not really capable of being generalised to wider populations.

The samples of adventurers/ explorers and elite athlete / coaches demanded each subject to have experienced first hand what they perceived to be a mental toughness situation and to be able to articulate their thoughts and feelings in attempting to

provide a full descriptive account. Given their individual profiles and highly selective inclusion criteria, each subject would be required to have the necessary experience which would hopefully provide data rich and thick in descriptive detail. Unlike previous studies (Fourie and Potgieter, 2001; Jones *et al.*, 2002) it was considered important to purposefully select athletes who had demonstrated the ability to win medals at the very highest level as opposed to those who merely contended for the medals. The perceptions of a medallist may be different to that of a non-medallist, given they already understand what it means to be a contender and then having the added experience of gaining a medal to draw upon for their reflective thoughts and explanations. Such important criteria were similarly adopted and further recommended by Middleton *et al.* (2004) in their recent investigation.

The reason for the inclusion of the elite coach sample is strikingly similar to that of the elite athlete sample. The need to target selective coaches who have guided athletes to medals and to attempt to understand from direct experience what elite coaches perceive mental toughness to be and consist of, from their own unique position. It is extremely important for them to provide their own perspective as a coach, not what they perceive mental toughness to be from a performers' perspective. From the position of the coach, the situations they have to live within and experience are totally unique and personal to their world. Previously, elite coaches have not been researched as a target sample, but Jones *et al.* (2002) strongly suggest they should be. Fourie and Potgieter (2001) sampled what they described as expert coaches (n=131) but did not indicate their elite status or whether they had coached medal winning athletes.

Middleton *et al.* (2004) combined athlete and coach data due to coaches being prior athletes and arguing the same perspective is acceptable and warranted, which has to be acknowledged as a possible methodological criticism of their study.

Coaches arguably have a very different set of realities to deal with compared to athletes and adventurer/ explorers. It is the unique first person experiences that are extremely important to the study. Taking three distinct sample groups may allow conceptual comparison following data analysis, but each data set really belongs to the world that it is 'perceived within'. Primary analysis is directed at data within sample populations, given that hypothesis testing is avoided during emergent grounded theory analysis from a Glaserian approach. Only Fourie and Potgieter (2001) have indicated that commonality exists between expert coach (n=131) and elite athlete (n=160) personal descriptions of mental toughness. Such work requires further investigation with highly selective samples and alternative methodologies such as in this study. The issue of congruency is particularly relevant in that if differences do exist then it has serious implications as to how different interpretations of psychological concepts need to be addressed. Coach / athlete relationships on a communication level need to be 'talking the same language' if the aim is to be attempting to further develop mental toughness within the athlete and improve performance.

The adventure/ explorer sample was included to offer a situational/contextual variation to elite sporting performance. To date, no previous research has attempted to investigate mental toughness perceptions with adventure/ exploration cohorts. As in the other two samples the investigation will purposefully sample participants who have demonstrated outstanding achievements and are highly respected by their peers. Mental toughness may well be perceived differently given the situational context in which the activity is performed within. Elite sport is not a matter of life and death and people do not risk their lives performing for medals at major championships, but adventurers and explorers do each time they decide to engage in risk activity. At the risk of setting out a prior hypothesis this sample were deemed important to offer an

alternative discipline with slightly different situational circumstances surrounding it that subjects need to endure and experience. Put simply, this population may well perceive mental toughness differently than elite athlete / elite coach samples? Given that phenomenological inquiry reflects the personal meaning attached to 'lived experiences' of participants in different social situations the rationale for sample selection seems justified and provision of specific sample criteria for inclusion is an important consideration. At the outset no attempt was made to target gender differences and this was not considered important for inclusion criteria. If differences were located within samples it would be a result of emergent data as opposed to prediction.

4.6 Purposive sample criteria

Specific criteria for sample selection and inclusion are required in order to satisfy acceptance for participant inclusion.

Adventurer / Explorer Sample:

Operational Definition: Adventurer:

A person who enters into a risky undertaking of an outdoor activity with unknown outcome.

Criteria:

1. To have an adventure / explorer profile, which provides evidence that such tasks have been publicly, recognised as outstanding feats of human endeavour.
2. To have had published accounts of personal experiences which provide evidence of human endeavour.
3. To have been peer recognised by another adventurer / explorer as a suitable information rich participant.
4. To have been a recognised member of the Royal Geographical Society and be a lecturer on Geography and Exploration.

A person who satisfied three of the four criteria would satisfy the sample requirements. No participant was considered merely satisfying the fourth criteria point

alone. The entire sample used in the study satisfied the first three of the four sub criteria with 12 (57 %) satisfying them all by having published their personal experiences.

The participants for this investigation were 21 adventurer / explorers (4 females and 17 males) These consisted of 11 mountaineers / climbers, 3 polar explorers, 6 adventurer/ travellers, 1 military personnel (SAS regiment) from the ill fated Bravo Two Zero, Gulf War mission. The sample included 7 Everest climbers, 6 of who had successfully ascended the world's highest peak, and one member of the original successful 1953 team. The remaining climbers were peer recognised elite mountaineers who for the past 50 years have regularly climbed the world's highest peaks in the Himalayas, the Karakoram, the Alps and the Andes. One particular participant had successfully climbed all of the worlds 14, 8000-meter peaks. The adventure / explorer cohort included sailors who had successfully crossed the Atlantic, expeditionists who have explored remote regions of the world such as the Arka Tagh (with an approach through Chinese Turkestan), Antarctica and the Arctic, the great Australian outback, Patagonia, Amazonia, the Andes and the Galapagos. The Polar explorers had experience of expeditions to both poles and two had successfully crossed Antarctica on foot. Overall, a hugely experienced, information rich sample. It targets a diverse background of experience in order to provide explanations and interpretations of perceptions of mental toughness.

Elite Coach sample:

Operational Definition:

To coach at international level in a one's chosen sport.

Criteria:

1. Participation as a coach at international level for more than four years
2. To have coached a medal winning athlete at a major championship (Olympic Games, Commonwealth Games, World Championship or European Championship)
3. To be peer recognised by another international coach as a suitable information rich participant.

The first two were crucial for inclusion. The first could not be violated.

No participant was considered merely on satisfaction of the third criteria point alone.

All coaches in the sample (n=33) satisfied the first two criteria with 22 (67%)

satisfying all three criteria. Twenty-five were male and eight female (33 total sample),

all were Elite Coaches from Great Britain, except one elite male coach from Australia.

A wide range of sporting disciplines were included such as Field Hockey (5),

Badminton (2), Cycling (4), Track and Field Athletics (1), Swimming (9), Basketball

(2), Equestrian (2), Sailing and Windsurfing (3), Rugby (1), Bobsleigh (1), and Canoe

Slalom (2). All were senior level coaches and 29 (88%) had coached athletes in

World, Olympic, Commonwealth or European Championship preparation. Twenty

coaches had direct coaching experience at major championships and 29 (88 %) had

coached athletes to major championship medals. These included World Champion

Gold Medallists (4), Silver (5) and Bronze (3); Olympic Gold Medallists (2), Silver

(4) and Bronze (3), Commonwealth Gold Medallists (6), Silver (8) and Bronze (15).

Coaches had also produced European Champions on numerous occasions in five

different sporting disciplines.

Elite Athlete sample:

Operational Definition:

To participate at international level in a one's chosen sport.

Criteria:

1. Participation at senior international level in one's chosen sport.
2. To have been a medal winning athlete at a major championship (Olympic Games, Commonwealth Games, World Championship or European Championship)
3. To be peer recognised by another international athlete as a suitable information rich participant

The first two were vital for inclusion. The first one could not be violated. No participant was considered merely on satisfying the third of the criteria alone. The participants for the investigation were 37 elite level athletes (14 male and 23 female). All athletes in the sample satisfied the first two criteria with 29 (80%) satisfying all three criteria. All were Elite athletes from Great Britain apart from one Canadian female athlete. A wide range of sporting disciplines were included such as Field Hockey (6), Badminton (7), Cycling (3), Pentathlon (1), Swimming (8), Equestrian (2), Sailing and Windsurfing (3), Canoe Slalom (3), Rowing (3), and Snooker (1). The sample included World Champion Gold Medallists (4), Silver (7), and Bronze (6); Olympic Gold Medallists (1), Silver (5) and Bronze (6); Commonwealth Gold Medallists (10), Silver (11) and Bronze (12). Athletes were also European Champions on numerous occasions in five different sporting disciplines.

4.7 Procedure

Establishing contact with the participants

Adventure / explorer sample (n=21)

Initially, invitation letters for interview participants were sent out to adventurer / explorers (number = 6) as provided by the Royal Geographical Society, Lecturers on Geography and Exploration visiting lecturer document (1996). Individuals who had impressive profiles and who indicated they were potentially information rich subjects were purposefully targeted. All six participants who indicated they were willing to

participate were interviewed, as they satisfied the necessary inclusion criteria.

Additional participants were included through snowball sampling technique for the purpose of theoretical sampling and exploration of emergent themes. Such procedures as peer recognition suggestion based on set criteria provided candidates with high integrity and impressive profiles to support the existing sample.

Elite Coach Sample (n=33)

Elite coaches were purposefully selected as members of the British Olympic Association Coaches Advisory Group (1995), and contacted via telephone and personal communication requesting their inclusion in the study (n = 14), remaining participants (n = 19) were included as a result of either snowball sampling through peer recognition, or as potential information rich subjects (elite coaches) working with elite athletes by the research investigator in line with the inclusion criteria.

Elite Athlete Sample (n=37)

The elite athlete sample (n = 37) was the third sample to be invited to participate in the study. The researcher had personal contact with a large number of athletes due to consultancy experience and athlete profiles were considered to be information rich participants (n = 12). Through purposeful sampling elite coaches and interviewees were invited to suggest athletes with whom they work as potential information rich cases who satisfied the necessary criteria for the investigation. Such snowball procedures resulted in a further 25 participants.

4.8 The interview in context

The investigator conducted interviews both face to face at each participants preferred location, which included home residences, work places or training locations and also through telephone interviews. Participants had the choice of each type of interview /

location and 68 (75 % of total sample) participants were interviewed face to face. All interviews were tape-recorded, lasted between 50 and 100 minutes and were later transcribed verbatim and returned to participants for accuracy checking and possible modification. Eighty-six (96 %) of all interviewees returned transcripts, all were reviewed and personally signed, with five, (4 %) non-returns.

In phenomenological tradition, it was necessary to identify the essential requirement of phenomenological reduction or bracketing which is completed to suspend belief so that preconceptions and presuppositions are put aside and the true phenomenon or essence is revealed (Crotty, 1996). It is through such procedure that allows participants to reveal the experience in its true form, and bracketing by the researcher reduces the possible contamination of the data. Such approaches were considered as important to the current study as bracketing within each interview process and avoidance of colouring the respondents' views and perceptions of mental toughness were considered crucial to establishing the foundation of the grounded theory.

Although obviously aware of certain issues, which surrounded the research question, the researcher attempts to adopt a detached position where any previous personal views and assumptions are suspended during the interview process. Bracketing thereby allows participants interviewed to offer their experiences without interview contamination and therefore let accounts reveal the phenomenon in its 'true form'.

The real purpose of the interview is to attempt to get to the meaning of the lived experience of the participant without any subtle influence on responses. However, such practice is difficult, particularly when skills such as the use of reflection, clarification and the request for examples and conveyance of interest through listening techniques are required.

By adopting an unstructured, informal approach the researcher considered it the most appropriate in order to secure the personal and private perceptions of respondents.

Given that interviews were more than likely to be one-off encounters due to participant availability the researcher adopted an informal approach within a formally arranged single data collection session. In selective cases participants were asked for follow up interviews which allowed for elaboration on emergent thematic material (more advanced theoretical sampling), although due to difficulty in availability of subjects, these were relatively few in number, only accounting for 25% of total sample and possibly an investigation limitation.

The interviewer decided to ask participants a set of open ended neutral questions to provide the participant the opportunity to offer their initial perceptions before the interview became owned by the respondent and considered wider issues related to the topic. The following extract is a section of the interview script employed within the study.

The two initial questions offered were:

1. Do you accept the term mental toughness and have you used it at all in your past experience?

Elaboration probe a) If so, how do you attempt to explain it? I need to fully understand how you have used it in certain situations and what it consisted of?

Thinking back, what factors contributed to mental toughness? Are you able to describe and explain them in detail?

Elaboration probe b: If not, do you prefer any other explanation that you may wish to offer, to better explain/ interpret the concept? Then using your own words/terms how do you attempt to explain it?

2. Can you think of a personal experience in which you have displayed what you consider to be mental toughness?

Elaboration probe:

If yes - Can you think of that experience and describe and explain it in as much detail as it happened?

Each participant was contacted and asked to confirm their inclusion, the rights for data to be used in write up and any rejections were respected, and subsequent data ignored. Non-returns (n = 5, 4 % of total sample) were followed up to check for participant responses. The return of data to participants for verification in qualitative study is a method of enhancing data credibility and is known as member checking (Lincoln & Guba, 1985) and this was administered securing a high response rate (90%+ of total sample).

During final transfer within write up, quotation segments that may readily identify a participant were deleted and the researcher attempted to accurately portray and report data whilst maintaining confidentiality. All data was then archived for audit purposes.

4.9 Interpretation and Evaluation of the chosen method

The first important point which must be explained with regards the method of data collection and the subsequent interpretation of the data for analysis purposes is the debatable issue of employing what must be considered as a diluted form of phenomenological inquiry. The IPA (data interpretation) provides the substance and meaningful foundation for the initial raw data themes (key point codes) within the grounded theory framework. It is acknowledged that to complete a pure phenomenological study that attempts to encompass the totality of the 'lived experience' by respondents needs to consider much more than the collection of verbal data for transcription analysis (Giorgi and Giorgi, 2004). This must be considered as a methodological limitation within the current study as it is accepted that more happens within the research setting than is merely recorded by data.

This research is using phenomenological method and basic interpretation of data merely to add substance and resonance to emergent themes within the grounded

theory development. It is not attempting to provide a complete 'lived experience' account on the nature of the circumstances, contextual influences and social interactions that contribute to a personal experience that an intense phenomenological study would provide, such as conducted by Rees, Smith and Sparkes (2003) when investigation the social support of spinal injury sportsmen. The major objective is having the participant retrospectively recall a personal event that they can draw upon to help explain how they perceive mental toughness. This falls far short of what must be considered as a complete 'lived experience' account that requires intense prolonged engagement with participants.

The researcher acknowledges that it is a rather ambitious attempt to integrate two approaches, but given the somewhat diluted nature of the phenomenological method to provide substance to the conceptualisation of themes and categories of a grounded theory of mental toughness the researcher feels the decision is justified.

The key for the interpretation of data in this study is to explore how respondents reflect and draw upon their personal experiences and interpret such situations so as to provide a personal detailed description of what mental toughness is and means to them. It does not attempt to go beyond that main objective; it is for the most part considered retrospective description.

The phenomenological approach is merely driving the search for psychological meaning as lived by the participant. Given the detailed personal account what is it that makes them describe mental toughness in a particular way? It is acknowledged by the researcher that retrospective descriptions are not the only potential source of phenomenological inquiry.

4.10 Procedures for analysis of interview data

The purpose of this section is to provide detail of how the researcher intends to confront the raw data, outline the coding procedures and then provide explanation on how the researcher interpreted and subsequently evaluated the data.

When considering important issues such as coding, interpretation and data analysis the researcher needed to carefully consider the two phase process which would accommodate both the phenomenological processes of the data that underpins the theoretical model and the development of the emergent grounded theory.

Reference is made to Figure 4.1(p.80) which demonstrates the early phases of the research process and outlines the important coding phase following transcription and member checking of interview data by participants.

4.11 Initial stage of data analysis - (Phase 1) Interpretative Phenomenological Analysis (IPA)

The first stage of analysis is dedicated to meticulous transcription review and the search for themes in the first case. The researcher has to become familiar with the narrative and use annotations to highlight text which is interesting or significant based on what the respondent has offered. This is regarded as free textual analysis in phenomenological inquiry and open coding within grounded theory analysis.

Such procedures are included within the initial phase of a 3 step phenomenological process of data analysis as highlighted in Figure 4.1, these being: 1) reduction, 2) description and 3) seeking out essence within the data (Giorgi, 1997).

Given that the researcher has successfully managed psychological reduction (step1) the main focus initially should be on the identification of descriptive and meaningful content matter in relation to the research question. At this stage no restrictions are

applied in terms of making notes or annotations when interpreting the text. Some text may be extremely relevant whilst other parts may well be totally irrelevant. The researcher may highlight salient words, phrases or consider key points which summarise or paraphrase salient data. Associations and possible relationships between themes may appear at this stage of preliminary interpretation. As the initial coding proceeds some points or connections may be reinforced whilst unique points surface. The entire transcript is coded and then the process is repeated to filter out less relevant content and focus primarily on resonant material. This process is repeated a number of times (step 2). At this stage material is carefully considered for salient phrases and meaningful content matter which captures the essential quality of what was found in the text (step3).

This process of converting initial notes into meaningful themes or key points in response to the question asked is known as transformation within phenomenological inquiry and is an important process which should be meticulously performed. It is likely that numerous themes emerge from each paragraph of text, given the respondent is answering the question in an astute manner and the number of emerging themes reflects the richness of a particular passage of material.

The extract that follows shows preliminary phenomenological analysis (IPA) for a small section of the interview with an Adventurer / Explorer, who was one of the first participants in the study.

INITIAL NOTES	DIRECT INTERVIEW TRANSCRIPT	RAW DATA THEMES-KEY CODE TRANSFORMATION (IPA)
Demanding activity Family concerns	<p><i>Int.</i> The first thing I try to do is to ask people about their experiences and to provide me with an example of what the most demanding activity is that you have participated in when you have demonstrated what you think mental toughness is?</p>	
Puts climbing in perspective in relation to more important things in life – contextual differences exist	<p><i>S.</i> Right, well the most demanding activity that I have participated in at the moment is having a family with two boys with a life threatening illness and besides that climbing Everest seems pretty straightforward.</p>	<p>Demanding activity</p> <p>Dealing with Life Threatening Illness (of others)</p>
Other more 'mentally tough' related issues in wider life perspective	<p><i>S.</i> Do you want something that is purely an expedition type of thing?</p>	
May have numerous examples to offer	<p><i>Int.</i> Really up to you what you wish to talk about. That's an interesting point that you have brought up there, because when we do put it in perspective and the thing you have just mentioned in the terms of scaling things climbing mountains, how is that mentally tough?</p>	
Life threatening activity		
Extreme Stress Environment but can also un-stressful	<p><i>S.</i> The thing about a mountain expedition is although it can be life threatening, to life and limb and it has moments of extreme hard work and stress, it's in an environment which is friendly, calm, peaceful and in many ways a wonderful escape from the pressures of urban life, or suburban life perhaps I should say. In many ways an expedition is a very un-stressful thing I would say.</p>	<p>Life threatening activity</p> <p>Extreme hard work</p> <p>Stress (negative)</p> <p>Pressure of urban life</p> <p>Stress Interpretation</p>
Different pressures than normal life		
Escape from pressures – its enjoyable alternative		
Interpretation of Stress is down to the individual		

Table 4.3 Example of preliminary IPA coding and thematic emergence

The process which is outlined is applied to the entire transcript. The researcher firstly makes the initial notes in the left hand column and applies interpretative analysis.

Then on the second review of the transcript adds the thematic titles which are based in the meaningful interpretation of the material. In doing so, *'initial notes are transformed into concise phrases which aim to capture the essential quality of what was found in the text. The themes move the response to a slightly higher level of*

abstraction and may involve more psychological terminology' (Smith and Osborn, 2004, p.66).

The aim is to find interpretations which allow theoretical connections within and across the cases and which are grounded in the context of the narrative. The transformation may involve repetitive coding and reinforcement of themes which adds resonance and meaning to them but care has to be taken that the meanings attached to themes are extremely similar.

The coding exercise is repeated for concurrent interviews and the data is then imported into NUD*IST software package for further data coding which involves the creation of data index trees and search and retrieval exercises to facilitate locating connections between important thematic phrases and key words. It is at this initial stage of the data analysis that the most important feature of phenomenological inquiry is performed and meanings are attached to the narrative. The key words (initial themes) to which meanings are attached provide the structural framework for the continuing analysis which attempts to connect themes which adopt concept qualities due to the similarity of meaning and contextual relationships.

Thematic coding for additional properties whilst also developing relationships between concepts is a dynamic process. Interview transcripts are analysed for phenomenological meaning, transformed and coded and then imported into the NUD*IST programme to be converged within a database for thematic relevance e.g. self-confidence and belief, or having self-control etc.

An applied example from the study illustrates the coding process as self-confidence was coded from a transcript with an equestrian coach as:

INITIAL NOTES (IPA)	DIRECT INTERVIEW TRANSCRIPT	RAW DATA THEMES - KEY CODE TRANSFORMATION
Confidence is basically related to ones sense of self. Self belief is the foundation of all confidence and this provides the mental toughness to sustain ones determination to succeed. People have to believe they are good enough deep down inside.	<p><i>Confidence ... I mean you have got to have confidence in yourself in the long term and one wouldn't I suppose be resilient and mentally tough enough to stick at it through thick and thin if you didn't really believe that you are good enough to do it.</i></p> <p>*Noted link to self belief</p> <p>Elite Coach 2- Equestrian</p>	Self Confidence

Table 4.4 Example of IPA and thematic coding of Self Confidence

From a phenomenological perspective the coach is attaching meaning to self confidence in ones ability and implies it has durable qualities which are required through both positive and negative experiences. Therefore by using phenomenological analysis (IPA) the data assumes more meaningful interpretation.

The above example coded the independent theme as self-confidence but also an emergent link was noted to the theme of self-belief. Further examples demonstrate that self-confidence was interpreted slightly differently:

INITIAL NOTES (IPA)	DIRECT INTERVIEW TRANSCRIPT	RAW DATA THEMES - KEY CODE TRANSFORMATION
When considering self-confidence as an important component of mental toughness the coach highlighted that self-confidence may well be very specific and have state like characteristics, which is not dissimilar to self-efficacy or task specific confidence. In this case confidence stems from being technically proficient.	<p><i>Talking about the super elite, they say that self confidence is not just something that you have, it is something that comes from technical confidence and they always say that you need to get that first.</i></p> <p>Elite Coach 20 – Canoe Slalom</p>	<p>self confidence</p> <p>technical confidence</p>
Confidence is task specific and related to perceptions of ability. When people attempt different skills which they have lower ability or are	<i>You see some people who are just so confident on a bike and they are unbelievably skilful people at their specific craft and then you take them off their bike and they fall to pieces, they just fall apart.</i>	<p>self confidence-task specific</p> <p>(self efficacy)</p>

unfamiliar with it is reflected in their performance. Confidence is directly related to ability to perform and what people think they are capable of doing.	<i>They can't talk to people; they can't live in different social environments.</i> Elite Coach 32- Cycling
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Table 4.5 Examples of IPA and thematic coding of Self Confidence / Self Efficacy

Such diversity of interpretation and ways in which people perceive aspects of mental toughness is the reason why such methods were adopted within the present study; to explore such individual interpretation. Applied examples from the investigation which illustrate the coding process within anxiety control for the elite athlete and elite coach samples include:

INITIAL NOTES (IPA)	DIRECT INTERVIEW TRANSCRIPT	RAW DATA THEMES - KEY CODE TRANSFORMATION
Need to explore which type of anxiety –cognitive or somatic? How is anxiety related to mind control- <i>follow this point up</i>	<i>I mean ... certainly, you are dealing with anxiety and mind control.</i> Elite Athlete 7- Pentathlon	 dealing with anxiety
The mentally tough performers do not change their mental approach even when the pressure is on. They stay relaxed and composed in critical moments.	<i>They look like they stay relaxed and they will knock about and stuff, but when it gets close they will do exactly the same thing.</i> Elite Athlete 30– Badminton	 staying relaxed/ critical moments
Mental toughness is about being able to control the nerves. The coach perceives that athletes anxiety to be a direct result of the pressure of selection procedures which precede major championships. When swimming an Olympic trial the mentally tough performers hold their nerve and perform well despite the pressure of selection being over them.	<i>Having nerves, or being able to control the nerves... that probably comes into mental toughness. To actually get on to the team, because there is an awful lot of pressure on them when they are swimming the Olympic trials or any major games</i> Elite Coach 21-Swimming	 controlling the nerves (performance related)
Controlling the nerves is related to holding it together in a critical pressure situation such as a Commonwealth final. There is no room for	<i>They have just got to be able to control their nerves on that level, at any major Games. We have just had the Commonwealth games and to win the top spot, to win the gold medal they have to</i>	 controlling the nerves (performance related)

error, it has to be complete control.	<i>completely control their nerves.</i> Elite Coach 17- Swimming
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Table 4.6 Examples of IPA and thematic coding of Anxiety Control within the Elite Athlete/ Elite Coach samples

It is quiet possible for anxiety to be created by many other situations, but the main key point code being the presence of anxiety and the ability to control the nerves. In a way the key point codes (initial themes) provide the psychological characteristics of mental toughness but the phenomenological analysis provides the substance and the meaning attached to such data to support the conceptualisation and theoretical development of mental toughness.

Within phenomenological investigations the potential for individual differences and variation in how people perceive things, objects and situations is accepted at face value. No personal biases are attached to how individuals may perceive their life world. In many ways differences are viewed as evidence that people can and do interpret things differently and meanings are subsequently attached to these experiences.

This section has considered the data analysis procedures for preliminary conceptualisation and offers direct examples in support. It attempts to explain the rationale and justification of the adopted method, a description of the method (interview) and also design and procedural issues concerned with sampling. It also offers explanation related to the process of interpretation and evaluation of the data within preliminary analysis. The following section will now focus on the later stages of theoretical conceptualisation.

4.12 The integration of Interpretative Phenomenological Analysis (IPA) & Emergent Grounded Theory in conceptualisation and theory development of Mental Toughness (phase 2)

It is at this stage the researcher considers methodological convergence between two forms of qualitative analysis, that of emergent grounded theory and phenomenological analysis (IPA). It is basically a question of searching for connecting themes and relationships between (key point codes and concepts) which emerge from within the data.

Analytical and theoretical ordering which attempts to make sense of the connections between themes is the next phase of the analysis. Because the researcher was intent on developing a conceptual model of mental toughness and the formation of a substantive theory, it was decided to proceed with grounded theory analysis following the initial phenomenological data coding, which established meaningful themes and concepts and supported conceptual analysis and theory development.

As in the initial phase of data interpretation the application of phenomenological analysis will attempt to provide substance and meaning to the relationships between emergent themes, concepts and categories. The process involves more analytical / theoretical ordering as the researcher attempts to make connections between emergent themes. Some of these will cluster together and others may emerge as super ordinate concepts which provide more meaningful links to the relationships between themes and assist in making sense of them. Such a process is iterative and involves close interaction between reader and text. Smith and Osborn, (2004) explain the process as:

'as a researcher one is drawing on ones' interpretative resources to make sense of what the person is saying, but at the same time one is constantly checking ones' own sense making against what the person actually said'(p.51).

The research process progresses into axial coding procedures (phase 2 coding) as outlined in Figures 3.1 (pp.49-50) and 4.1 (p.80), whilst also performing concurrent open coding with fresh interview transcriptions.

As the research process proceeds interviews are transcribed, scrutinised, coded and imported into the generic database of material for conceptual integration and theoretical development. The researcher is aiming to respect both convergences and divergences in the data findings which recognise and respect that accounts from participants are potentially similar but *also* different. The phenomenological inquiry provides the meaningful analysis of thematic content and convergence whilst the grounded theory attempts to provide later stage conceptual and theoretical development.

4.13 Evaluation of the Methods of Investigation used in the research paradigm employed.

The researcher dedicated a great deal of thought into the adoption of the most appropriate and suitable method to study mental toughness from within a naturalistic research paradigm. In consideration of previous work in the area and the aims and objectives of the study in mind the researcher chose a fairly ambitious integrated research approach which included combining phenomenological method, IPA and emergent grounded theory analysis.

The decision to employ such an integrated approach was driven by the search for meaning and the quest for a re-interpretation and conceptualisation of mental toughness which is based on a sound theoretical framework. This the researcher believes has not previously been achieved, as mental toughness research has always attempted to seek out some form of consensus of agreement (Jones *et al.*, 2002) on

what it is, as opposed to accepting possible differences in how the concept is perceived and explained by individuals.

Based on this point, the researcher feels justified in adopting such research approach.

The inclusion of interpretative phenomenological method and preliminary analysis was deemed as a necessity in order to provide the search for meaning and an attempt to provide evidence as to how individuals attempt to make sense of what mental toughness is to them. This provides another dimension to improve on previously reported findings.

At the risk of falling foul of potential method slurring the researcher believes the adoption of an integrated approach provides the most effective way to studying the perception of mental toughness from three distinct samples. It is also acknowledged that combining two approaches is a contentious issue and that a researcher needs to accept the limitations of one chosen method, and often this choice cannot be fully justified (Giorgi and Giorgi, 2004). However, in doing so the researcher feels that by combining the strengths of two approaches the project will yield a deeper explanation as to the conceptual and theoretical understanding of what mental toughness really is as a psychological concept.

4.14 Evaluation of the chosen method

Evaluation of the methods employed within any qualitative investigation is directly related to the following issues:

1. What the chosen method appropriate for answering the research question?
2. The ability of the researcher to implement the chosen method in gathering quality data for meaningful analysis. The method is basically a 'tool' to gather data and the researcher becomes the tool which ultimately influences the quality of the data.
3. The successful achievement of gathering high quality data for analysis.
4. The credibility and trustworthiness achieved within the data gathering process.

5. Acknowledgement of potential limitations of the method employed.
6. Consideration of possible modifications for future research.

In consideration of previous discussion within the chapter, comments will only be directed at evaluating the effectiveness of phenomenological interview method in gathering meaningful data, potential limitations and possible modifications.

Although it was considered to be a totally appropriate method with many strengths and being unique to the study of mental toughness, the researcher did encounter method concerns during the project.

The method generated high quality, information rich data at the preliminary stages of the study which resulted in a solid foundation of key code themes on which to build the emergent theory. However, the method also produced masses of irrelevant data that required filtering and this was totally disproportionate to the actual data that was used in the analysis. Time spent on verbatim transcription, coding and member checking documentation was at times hardly cost effective. Although the skill of the interviewer may be a factor, the openness of the questioning technique provides the participant open licence to drift off the actual focus of the question, misinterpret the point and offer what results in poor quality data which is eventually discarded.

Overall a highly time consuming exercise which requires modification to filter out irrelevant data in favour of more meaningful material pertinent to the research question. An exercise of selective coding would be more suitable and a reduction in the amount of verbatim transcription and coding would allow more time to be spent on treating salient data. The objective of treating data is to focus on what is most meaningful and the whole process of interview data analysis requires a more focused approach.

The phenomenological questioning approach which allows the participant to drive the dialogue is extremely valuable in generating meaningful data in the first instance, but when further elaboration is required to explore emergent concepts and categories then it has to be adapted and modified accordingly to cater for more elaborate questioning. This was one area the study may have been improved. Prolonged engagement is required to explore emergent data and this has been noted as a research limitation. On reflection fewer participants should have been engaged with definite opportunities for follow up interviews to further explore the emergent data. Interviewing additional participants to gather data results in duplication and reinforcement of existing material which is fine but it offers minimal return in terms of new material. The study required more second and third phase interviews to explore developing conceptualisation. In the confirmed cases when re-engagement was possible it did produce the quality data. The successful achievement of gathering high quality data within this approach can ultimately be decided on the interviewing skills of the researcher. They need to ask the most appropriate questions at the right time, with the astute decision making skills to interject and offer elaboration questions to explore the answers with the most penetrating effect. Knowing when to ask a question and when to delay or probe for more data based on the response is what generates quality data. Additional skills such as avoiding presuppositions and assuring phenomenological reduction are effectively applied during the interview process are also crucial.

The major strengths and limitations of the chosen method can be summarised as follows in Table 4.7.

Perceived Strengths	Perceived Limitations
<ul style="list-style-type: none"> • Evidence it generates high quality meaningful data from a 1st person perspective. Provides a very different approach to other qualitative methods. • Provides a deeper understanding of a complex mental characteristic as an alternative to existing research understanding • Allows individual interpretation to demonstrate the possibility that such complex mental concepts have a potential multiplicity of meaning attached to them. Some research questions require the adoption of a naturalistic paradigm method to fully discover the true meaning of what a concept is perceived to be. • Avoids presuppositions, assumptions and existing beliefs of what a concept is. Takes a neutral stance and lets the evidence emerge from within the participant. Considers reality to be only true from the 'insiders' perspective. • Relatively easy to prepare in terms of script presentation and interview preparation • Very useful for gaining an in depth perspective on a personal life event/ experience which allows prolonged engagement (repeat interviews) to explore further conceptualisation. Needs to consider small samples (n <10) due to large data generation. 	<ul style="list-style-type: none"> • It generates too much irrelevant data which is not useful in the eventual analysis (results and discussion sections).Extremely time dependent and labour intensive to locate the quality data and reject the masses of irrelevant material that such an approach produces. • If no research consensus exists on the true meaning of mental toughness then it becomes an enigma and lacks usefulness in attempting to develop and apply strategies to improve it. It assumes multi-dimensional qualities that require extremely individualised approaches to understanding and explaining it. • There may be a presupposition that the person actually fully understands the issue and has the knowledge and understanding to articulate the true meaning of what is being investigated. • Extremely difficult to perform in terms of implementation. Time allocation to conduct interviews, transcription, coding and analysis. Research skills required for successful implementation are numerous and they drive the quality of the eventual data for analysis (interview questioning technique, coding etc) • Needs to be cautiously integrated within combined studies which do not allow prolonged engagement or involve large sample numbers. If so, a diluted version of the method with selective transcription coding and analysis should be adopted.

Table 4. 7 Summary evaluation of the chosen method employed within the study

The researcher feels the choice of method was wholly appropriate for the purpose of the study in attempting to answer the research question. There is no doubt that it did produce high quality data for analysis within all sample groups. Table 4.7 shows that the method had much strength in terms of generating data but also limitations and

concerns attached to it. Major problems emerged due to issues related to time dedicated to transcription, member checking and analysis, sampling procedures and the ambitious attempt to integrate the method into a grounded theory methodological framework. On reflection, tighter control should have been exercised on initial sampling and greater attempt should have been made to secure prolonged engagement to fully explore conceptualisation of the emergent data (i.e. fewer subjects and more repeat interviews). Overall, the benefits of the method outweigh the problems associated with it, if the objective is purely to generate high quality data.

In total 91 interviews were completed and lasted approximately 60-90 minutes. All were tape recorded in their entirety, transcribed verbatim and yielded on average 20 single typed pages each. These were then subjected to trustworthiness member checking procedures where participants were invited to review, check for accuracy of transcription and return data for analysis. Member checking procedures achieved over a 95 % success rate across three samples. Although it is acknowledged that too many single case interviews were conducted for data analysis, it is also believed by the researcher that the data provides the most comprehensive and complete account of what 'mental toughness' is to date and advances previous understanding from within 3 discrete samples.

4.15 The use of computer assisted data analysis

It seems there is now a perceived legitimisation of qualitative research through such software packages, as recently published work in respected journals reports its use within its data analysis (Jackson, Dover, and Mayocchi, 1998a; Bull *et al.*, 2005). The software packages accelerate mechanical searches and the retrieval of data in the analytical process as it allows the construction, organisation and management of an index system of raw data in the form of data categories or nodes to be manipulated

and explored. The QSR. NUD.IST (1997) computer package employed within this study is really only a facilitating tool and cannot be viewed as a substitute for the rigorous analytical process itself which considers how the data is treated, the conceptualisation of data and how it is meaningfully interpreted and explained.

4.16 Summary

This chapter has attempted to provide a rationale and justification of the chosen method (phenomenological interview) and also to consider the notion of congruence/compatibility with IPA and emergent grounded theory, considered crucial to investigation credibility.

Sections were devoted to describing and explaining the method and considered design and procedural issues with potential limitations included. Selective examples were offered to explain the preliminary coding within initial theory generation through coding, conceptualisation and categorization processes. The chapter finally addressed both the strengths and limitations of the method employed. Future modifications will be suggested in Chapter 7, where an overall critical evaluation of the study will be presented.

The following results chapter will focus more specifically on data coding, conceptual integration, categorization comparisons, and formulation of core categories within samples, which ultimately provide the basis for the grounded theory of mental toughness.

CHAPTER 5

RESULTS

5.1 Results

This purpose of this chapter is to present the results from the three sample groups using a combination of phenomenological IPA (Smith & Osborn, 2004) and grounded theory analysis (Glaser, 1992). It initially shows how key coded data emerges into concept and then category formation, which subsequently develops into a grounded theory in the following discussion chapter (6). This is supported by detailed source of interview data and selective direct quotations.

As a general overview, Table 5.1 below provides a thematic breakdown of data themes generated. It shows key point codes, emergent 1st order concepts, higher order categories and eventually core categories.

	ADVENTURER / EXPLORER (N=21)	ELITE ATHLETE (N=37)	ELITE COACHES (N=33)
RAW DATA THEMES (Key Point codes)	78	126	104
1 st ORDER CONCEPTS	16	24	20
HIGHER ORDER CATEGORIES	6	7	6
CORE CATEGORY	1	1	1

Table 5.1: Thematic breakdown of 3 sample groups

Although it is debatable if saturation is ever achieved, interviews with 21 participants in the Adventure / explorer sample, 33 in the Elite Coach and 37 in the Elite athlete cohort registered marginal returns from further data coding and thematic analysis. The subsequent breakdown for each cohort is shown in detail in appendices A, B and C, Volume 1. The tables provide details of the direct source of information within each sample in relation to each concept. These may contain numerous citations to substantiate each concept within and across interviews.

Data analysis – Grounded theory codes, concepts and categories:

As a general guideline to help explain the coding process from which emergent findings were derived, Figure 5.1 diagrammatically shows the different phases of the grounded theory analysis including initial IPA coding and transformation into key point codes.

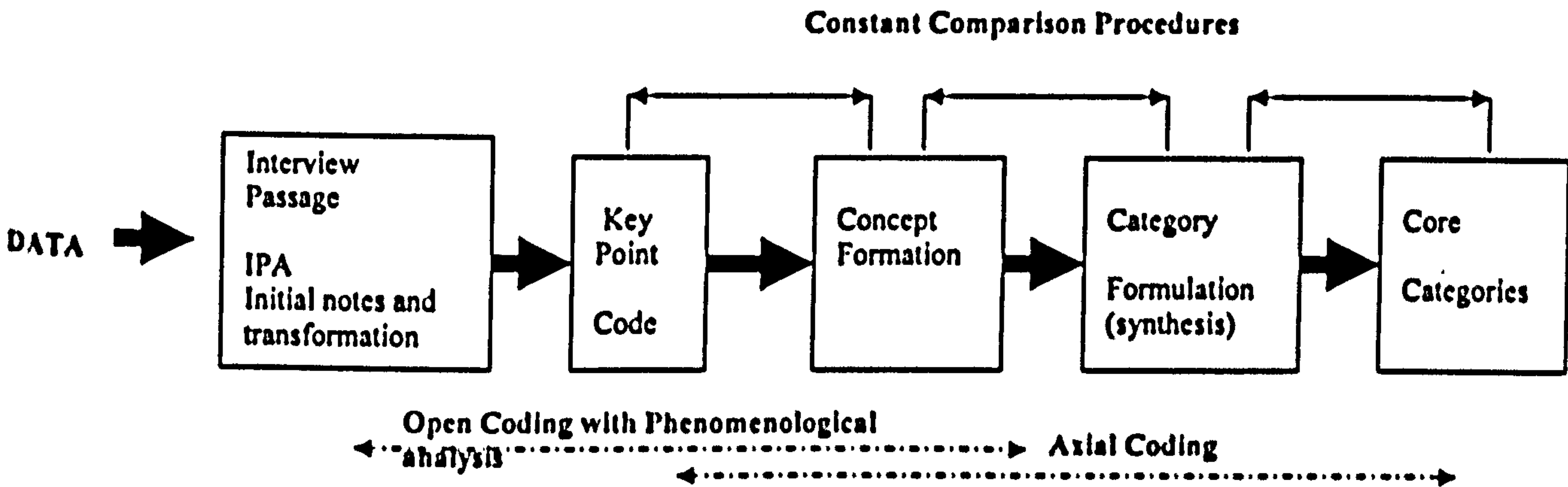


Figure 5.1 Coding processes adopted within the Mental Toughness study

Glaser (1992) suggests key point coding as a useful method of avoiding over-conceptualisation when conducting micro –analysis, another pointed criticism of Strauss (1987) and his commitment to conceptualisation of data. Because of the enormous amount of data being generated identifying key points from raw data were registered therefore allowing concepts to emerge. Miles and Huberman (1994) also advocate the use of key point coding when addressing qualitative research questions as a protection against data overload.

An example of early coding within the adventure sample is provided in Table 5.2 to illustrate the results of open coding. The entire transcript for Adventurer 2 was coded from transcript direct quotation, via IPA and transformed into specific key code themes. When possible, meaningful statements were used for thematic labels.

Interview Text for IPA transformation	Codes (Key point)	Participant
<i>Its your own sense of personal direction and your self belief</i>	Sense of Direction Self Belief	Adv 2- Male Mountaineer
<i>I'm pushing my envelope but being realistic</i>	Taking a risk Being realistic	Adv 2 - Male Mountaineer
<i>Its about making sensible decisions , sometimes the correct decision is to turn back</i>	Effective decisions	Adv 2- Male Mountaineer
<i>Making logical judgements so you have the best possible chance of success</i>	Effective decisions	Adv 2 - Male Mountaineer
<i>To continue making rational decisions in physically demanding conditions</i>	Rational decisions under pressure	Adv 2- Male Mountaineer
<i>Life experience , wisdom from experience develops MT</i>	Wisdom from experience	Adv 2 -Male Mountaineer
<i>When things go wrong and you keeping going.</i>	Experiencing failure	Adv 2 -Male Mountaineer
<i>I don't believe in failure.</i>	No acceptance of failure	Adv 2- Male Mountaineer
<i>Self awareness is one of the most important things</i>	Self/Inner Awareness	Adv 2- Male Mountaineer

Table 5.2 Example of selective key point coding (Open Coding) for Interview Adv 2, Mountaineer / Climber

The adventure participant above (Adventurer/ Explorer 2, Mountaineer) registered a total of 19 references to mental toughness .Additional coded themes from the above participant included control of stress, dealing with pressure, coping with death, control of ego, having personal challenge, dealing with pain and having full attention on task. In each case the raw data is interpreted through IPA for its meaningful content and this is used to formulate the coded key point. In the above example duplication of themes emerge and IPA allows more in depth analysis, to reveal that effective decision making involves being courageous and acceptance that failure, even though difficult needs to be accepted when making correct decisions. Additionally effective decision making is a complex process and involves numerous factors which include logical judgement, the physical / cognitive nature of the task, and an element of risk taking. Similarly, elite coach and elite athlete interviews were being undertaken and being coded simultaneously to form their own distinct databases.

Interviews proceeded and a broad database was progressively constructed with key coded emergent themes being layered within existing structures or new coded themes being added within each distinct database.

Table 5.3 demonstrates examples of initial coding of key points for the Adventure / Explorer sample. Each individual interview generated a coded profile that could be accessed through immediate retrieval for referencing and comparison purposes (see Appendix 4, Volume 2, for profile example). As data emerges it allowed comparisons to be made within sample groups of key points that may have similarities within their coding references. Such cross comparisons allow the formation of concepts and subsequently category formation within the emergent theory.

It also demonstrates that each individual profile contains subtle differences and this provides evidence that perceptions of mental toughness within discrete sample groups do vary considerably. No two profile reports offer exactly the same combinations of mental toughness characteristics and are fairly idiosyncratic. This in itself provides justification for the adoption of inclusion of a phenomenological approach to analysing the data. The massive variation of individual differences related to perceptions of mental toughness demonstrated in each of the discrete sample groups is available to the reader within the appendices a, b and c. The emergent concepts from within each sample together with the supporting key point codes (initial themes) and the individual sources of data are provided. Such distinctive differences provide evidence that perceptions of mental toughness at a base level are diverse. The second phase clustering process which relates associated themes considers conceptual relationships.

Interview Text for IPA transformation	Codes (Key point)	Participant
<i>Making sensible decisions, sometimes the right decision is to turn back</i>	Effective Decision Making	Adv 1
<i>Actually maintaining your focus and having full attention on task</i>	Full Attention on Task	Adv 2
<i>Knowing someone else is looking after you is very important. Helpful and supportive.</i>	Social Support	Adv 3
	Social Support	Adv 4
<i>Need to turn negatives into positives</i>	Control of Negative Thinking	Adv 3
<i>Its important to have a good partner and a good team</i>	Social Support	Adv 3
<i>You climb higher until you can't climb any higher; it's the personal challenge.</i>	Personal Challenge	Adv 2
<i>Not much more than having made an assessment of the situation and knowing what the dangers are</i>	Decision Making	Adv 3
<i>I think it's an ability to keep going under a great deal of pressure without making mistakes.</i>	Handling Pressure	Adv 3
	Decisions under Pressure	
<i>It is not the lack of fear it is absence of fear.</i>	Absence of Fear	Adv 5
<i>Needed to get out of a difficult situation by staying calm and composed</i>	Composure under Pressure	Adv 7

Table 5.3 Examples of key point (open coded) data from the Initial Adventure /Explorer Interviews

In order to consult the emerging key point codes for possible concept development it was necessary to conduct further interviews to allow such comparisons to be conducted. The process of cross code comparisons is applied in order to find higher order commonality. Such an exercise requires extensive comparisons within each sample to locate such similarities between coded data. Within each sample a root directory is formulated which contains references and selective transcriptions in support of each coded theme and material provides the database for concept formation.

5.2 Adventure / Explorer Sample –

The emergence of concepts within open coding

Some concepts emerged more readily and received repeated endorsements from participants and hence became immediately substantive (Glaser, 1992). Table 5.5 provides support for the formation of selective major concepts within the adventure / explorer sample and the specific sources of the coded data.

Concept formation progresses as additional data is processed and coded and relationships are made between key points. As interviews progress within a sample new data provides fresh ideas and concept formation. One example is the late formation of the concept 'dealing with success and failure' within the adventure sample presented below.

INITIAL NOTES	INTERVIEW TEXT	EMERGENT KEY CODED POINT
A paradoxical situation where success is an indication that one has not been fully challenged. Failure means that one can be pushed further and there remains a challenge to strive for. Being successful is merely an indicator that one has not been truly tested to the ultimate limit. This perception implies that failing may well be more mentally demanding than achieving success.	Your failures are going to be times when you actually get to the top of a mountain and not actually reach your limit. You can have a lot of you left (resources and physical effort etc) but so often when you have taken it to the limit and failed you have actually taken it to your very limit. So often your failures are illustrations that you have gone to your limit. Whereas reaching the summit and being successful you have not have had the option	Dealing with failure Dealing with success Adventurer / Explorer 16 – Mountaineer / Climber

Table 5.4 Emergent themes within the Adventure/ Explorer sample

Many references were made to the 'need to deal with failure' as an important aspect of mental toughness, but very few participants had referred to a successful outcome as sometimes disappointing. Such individual differences demonstrate that for some people succeeding is actually viewed as a sign of not being tested to ones true limits. Phenomenological interpretation would suggest that mental toughness in dealing with

failure means different things to different people and it's down to how one interprets failure and success that needs to be considered more closely.

As a result the concept had considered both contemplating failure and also the need to handle success. The complete concept table is shown in appendix A, Volume 1.

Tables of selective emergent concepts within the elite coach and the elite athlete samples are depicted in Tables 5.6 and 5.7. Complete concept tables are shown in appendices B and C, Volume 1.

Emergent concept	Supporting Codes (Key point)	Source of Data Adventure / Explorer Interviews
Planning and Goal Setting	Forward planning Being realistic Correct perception of challenge Taking the challenge Personal challenge Seeing the big picture Having a sense of perspective Having a sense of purpose The need to be adaptable and flexible when planning Having ambition Hitting your target	3,10 2 3,10,20 3,20 2,5,10,16 5, 7,20 15 15 5 2 2, 5, 16 2 2,5,16
Coping with Anxiety	Lack of fear Dealing with negative consequences Combating worry about oneself Combating worry about others Control of fear Dealing with negative self talk Control thoughts about negative consequences Coping dealing with death	5,10,15, 10,11,15 2, 2,16 15,21,19 16,15,20 10,11,15,16,20 2,3,10,13,15,21 10,11,15,16,20,21 2,3,10,13,15,20,21
Effective Decision Making	Effective decision making Making decisions under pressure Wisdom from experience Making joint decisions under pressure Patience in Decision making	1,2,4,7,10,15,16, 19 3,18,19 1,2,7,10 10,16,19 7,15,16,20,21

Self Confidence and Self Belief	Self confidence Positive self talk Having self belief	1,2,3,4,5,8,9,10,13,16,18,19,20 19 2,5
Dealing with Failure	Acceptance of failure Experiencing failure Correctly perceiving failure	3 2,3,5,7,10,15,16,17,18,21 3,19
Coping with Stress Situations	Composure under pressure Dealing with prolonged pressure Tolerance of others Mental preparation Dealing with pressure from colleagues Using humour to reduce pressure Chunking to lessen the burden	2,3,7,9,10,13,14,15,16,17,20,21 2,3,4,7,10,13,15,16,17,18,19,20,21 10,16 2,3,10,13,16,17,20,21 16 20
Self Control	Self Control Patience Emotional control Dealing with death Being unemotional Dealing with anger Coping with elation Emotional drive	2,7,10,16,18,21 3,21 5,7,15 2,7,10,15,21 2,5,7,10,21 10 10 5
Physical Fitness	Supreme fitness /physical state Physical / mental link	2,4,6,7,9,10,15,16,20 2,3,19

Table 5.5 The major concepts, supporting key codes and interview sources for the Adventure/ Explorer sample (n=21)

Table 5.5 shows the major concepts are supported by a diverse assortment of contributing key point codes. The substantiation of such concepts is reflected to an extent in the amount of supporting themes each receive. The resonance and meaning attached to each thematic key code can only be understood by deeper exploration of the data, and in some ways quantification of data does not equate to level of meaning attached to such concepts. Both quantity and quality of supporting data in grounded theory is required for a complete in depth analysis. The researcher feels the real value of a phenomenological approach within the initial coding of data is an important feature of the research project and demonstrates diversification of individual

perceptions within discrete samples. The level of abstraction of each concept is reflected in the complexity and diversity of the supporting themes. The concepts of planning and goal setting, coping with anxiety, effective decision making, coping with stress situations and self control emerge with contributions from many different participants. On a slightly higher level the emergent themes which are assumed by conceptual labels begin to *disguise* the individual differences located within the initial phenomenological analysis in open coding procedures. This in retrospect may be considered as the important phase of the research project where the two approaches adopted for data interpretation begin to differ in their strengths and limitations. The phenomenological approach is intent on the discovery of personal meaning and the grounded theory, although concerned with emergent inductive analysis of individual data is also concerned with conceptual and theoretical development. Whether the integration of the two approaches together provides a valuable re-interpretation of mental toughness is the main objective of adoption of the research approach.

5.3 Elite Coach / Elite Athlete samples – Emergent concepts within Open Coding- (see Tables 5.7 and 5.8)

Tables 5.6 and 5.7 show selective emergent concepts for the elite coach and elite athlete samples. Full details of the remaining concepts are shown in Appendices (B & C) Volume 1.

Self Confidence	Self confidence Perception of ability Confidence in ability Confidence in training programme Confidence in coach Winning confidence Technical confidence Specific confidence	1,2,9,11,12,13,14,16,17,21,23,24,25,27,32,33 3,5,6,9,14,15,30, 2,3,9,12,13,16,17,20,23,24,30,32 23,30,32 23 6,8,32 13,20,23 21
Absolute Focus	Absolute focus Maintaining focus Having vision Consistent focus	1,2,3,4,9,10,12,13,15,17,18,20,23,24,28,30, 5,19,28,31 8,20,23 1,3,5,23

	Staying clear headed Staying in the present Auto pilot Seeing big picture	2,10,13,23 2,20 2 17,20,24
Dealing with Stress & Anxiety	Controlling the nerves Dealing with worry about performance Dealing with worry over selection Absence of negatives Dealing with fear Controlling anxiety & Holding it together Staying relaxed	2,4,5,13,16,17, 20,21,23, 2,8,11,16,17,23 12,21 13 9,11,23,24,25,32, 25, 6,13,21,23
Gaining the Mental Edge	Rising to the occasion Big occasion toughness Not giving anything away Being single minded Doing the job Being ruthless Killer instinct Hates losing Having a professional attitude Having maturity Living close to the edge Looking after oneself Winning mentality Not making excuses Courage and conviction	28 23 12 12,13 15 4,12,27 10 21 8,10,15 15 2 12 8,12, 23,24,32,33 22 2,3
Dealing with Set-Backs	Dealing with set-backs Dealing with form lapses in form Losing face Dealing with Losing	1,3,4,6,12,13,15,16,23,24,27,30,31,32 3,9,12,20 21 19
Dealing with Distractions	Dealing with external distractions Being able to Block out	1,2,3,8,12,15,20,21,23,24,32 2,9,14,15,17,20,23,24,27
Handling Event Pressure	Handling Pressure Being smart under pressure Handling event pressure Not feeling over awed on the day	2,4,5,13,14,18,20,23,28,29,30,32 2,30 14,23,28,32 5
Self Control	Self control Technical control Stability of control Being patient Control of ego	8,9,12,16,23 5,8,9,20 3 12,13,20,23 1,13,11,20,21,23

Table 5.6 Emergence of the major concepts from key point codes within the Elite Coach sample coding process (number = 33, 25m/ 80). Females in bold on right column

Emergent concept	Supporting Codes (Key point)	Source of Data Elite Athlete Interviews
Self Confidence	Self confidence Self confidence in ability Self belief Respect from others Knowing your tough State confidence On the day confidence In your team-mates In training programme	1,2,4,6,7,8,10,11,12,14,15,17,19,20,22, 23,24,25,26,28,29,30,35,37 1,2,6,7,8,9,14,18,19,29,31,32,33,34,35 1,2,6,7,8,9,14,16,19,20,23,26,29,31,32,34,35 2,3,4,6,7,15,20,26,27,31,32,35,36 31 7,20 2 2,3,6,10,15,19 2,3,6,9,15,20,26,30,
Dealing with Mistakes and Setbacks	Dealing with mistakes Dealing with setbacks Setbacks cont, Dealing with failure Coping with adversity Proving people wrong Getting through a difficult phase	1,7,8,9,12,15,16,21,22,23,26,27,29,32,34, 1,4,7,8,9,11,12,14,15,16,18,19,21,22,23, 24,25,26,27,29,31,34,35,37 7,20,36, 7,20,25,36 2,6,12,19,29,32,34 7,26
Absolute Focus	Being Focused Ability to focus Mental parking Unconscious quality Staying in the present In the zone Not thinking too much Mental intensity	2,7,14,30,33,35 2,3,4,8,10,13,15,16,17,19,21,29,30,34,35 8,12 6,10,19,28,29 35 30 1,26 12,29,34
Anxiety Control	Dealing with anxiety Controlling the nerves Dealing with worry Worrying about others Avoiding negative thoughts Avoiding complacency Re-interpreting anxiety Feeling overawed Staying relaxed Not thinking too much	6,7,16 6,7,25,26,30 7,35 30 3,6,8,10,18,19,20,26,29,30,31,33 35 10, 10,28,30 23,26,27 15,23,26
Dealing with Situational Issues	Media exposure Non selection Situational problems Team pressures Having the opportunity to medal Dealing with a life threat Dealing with captaincy Dealing with team mates Dealing with different conditions Travelling lifestyle Lifestyle demands	7, 2,16,29 2,6,8,9,10,15,16,17,22,24,29 12,16,28,34 20,36 7,17,37 12,28,34,36 6,12,15,20,26,28,29,30,34 2,8,12,26,33,36 15 2,6,8,10,15,19,29
Determination	Determined Making sure you get what you want Reaching the intensity level	3,6,8,9,11,16,18,19,21,22,24,34 15 30 29,34

	Inner strength Inner fight Channeling your desire Total commitment Heart v head	8 20 23 19,29
Dealing with Distractions	Dealing with distractions Blocking out Keeping it all in perspective Not thinking too much	7,8,15,25 14,35 26,35 10,28,31
Self Control	Self control Big point control Control of ego Self demanding Refusing to be intimidated Making it happen Avoid feeling sorry for oneself	1,2,8,12,17,20,23,28,29,32 1,6,8,15,20,26 19,26 3,4,15,26 26 1 19

Table 5.7 Emergence of the major concepts from the key point codes within the Elite Athlete sample coding process (number = 37, 14m/ 23f). Females in bold on right column

The most striking feature of both the above tables is that perceptions of mental toughness are extremely diverse when individual contributions are considered.

Additionally, concepts emerge from an assortment of contributing themes (key point codes) showing that perceptions of mental toughness differ considerably when preliminary data themes are considered. Selective concepts do have dominant themes whilst others emerge from an assortment of contributing key codes. From a phenomenological perspective the diversification of interpretation within preliminary coding demonstrates how people perceive the meaning of mental toughness differently.

Table 5.8 demonstrates how selective concepts emerged from key points (via direct data sources) within the elite athlete sample. Again, individual diversity is a striking feature that supports key coded data, even though at a conceptual level key points may well be linked together. The data shows that concepts emerge from varied but important interpretations of mental toughness which contribute to the conceptual labels (dealing with mistakes & setbacks, absolute focus, anxiety control etc).

Direct Data Source	Interview Text - IPA	Key Point Code	Concept
Elite athlete 30	<i>My set back, it was good for me, but at the time it was the worse thing I have ever had happen to me</i>	Dealing with a set back	Dealing with Mistakes and Setbacks
Elite athlete 2	<i>Who thrives on proving people wrong. I think he is mentally tough,</i>	Proving people wrong	Dealing with Mistakes and Setbacks
Elite athlete 21	<i>Not getting dragged down by all the problems and mistakes, looking on the bright side</i>	Dealing with mistakes	Dealing with Mistakes and Setbacks
Elite athlete 2	<i>It is just being very focused.</i>	Being Focused	Absolute Focus
Elite athlete 3	<i>The other one is to do with the ability to focus</i>	Ability to focus	Absolute Focus
Elite athlete 25	<i>MT is part of it is being able to deal with the nerves and being able to channel them in a positive way.</i>	Controlling the nerves	Anxiety Control
Elite athlete 33	<i>You have to take the best out of the criticism and not dwell one the negatives.</i>	Avoiding negative thoughts	Anxiety Control
Elite athlete 10	<i>Some people will just sit down and they are like thinking of the race I don't do that I like to relax</i>	Staying relaxed	Anxiety Control
Elite athlete 2	<i>There is like a competitive mental toughness, and training toughness.</i>	Situational problems	Dealing with Situational Issues
Elite athlete 15	<i>I couldn't come here for four days, stay over for four nights, you know, I have a life as well.</i>	Lifestyle demands	Dealing with Situational Issues
Elite athlete 3	<i>MT starts.... you have to get to that line fully prepared on the day</i>	On the day confidence	Self Confidence
Elite athlete 6	<i>I wouldn't be doing it unless I believed in my own ability.</i>	Confidence/ belief in ability	Self Confidence Self Belief

Table 5.8 Generation of selective concepts from within the Elite Athlete sample.

The important consideration during concept formation is to ensure the data is represented in its purest form in order to encapsulate the meaning of the spoken word. Phenomenological interpretation allows for direct representation of the interview data to form the key codes. As new key points emerge they are compared to existing structures, and if not related form the basis of a new concept.

It is obvious through observation that concepts vary in how much they are supported through interview data in terms of key code density. Such individual variation within

the conceptual make up provides evidence that key coding and concept formation is dynamic and cumulative and this continues through the entire data collection process. It is essential to register the value of the method adopted within the study which allowed such diverse perceptions emerge. The analysis merely provides a framework for thematic relationships to emerge and concepts to be formulated. A more complete perspective on individual differences at raw data/ key code / conceptual level can be realised when reviewing the appendices A-C (Volume 1) that shows the entire coded profiles for each sample. The most notable feature of such data is the presence of many themes which have not previously been identified in previous research studies. It may be that previous studies that have applied broad conceptual labels to what mental toughness is fail to consider individual differences at a more detailed level of analysis.

This section has attempted to demonstrate the important data processes and procedures which support the re-interpretation and conceptualisation of mental toughness. Direct examples have been provided to show how data was treated from preliminary coded transcript to concept formation. The process involves meticulous open coding (IPA) and formation of emergent key point codes from direct transcription (previously explained in Chapter 4/ Method). It then attempts to seek out relationships between key codes and resultant concepts emerge. The density or substantive composition of such concepts is determined by the quality and the richness of the material that supports them. Discussion will now focus on the emergent conceptualisation and categorisation of mental toughness within each sample group.

5.4 Conceptualisation and categorisation of mental toughness within the Adventure / Explorer sample

The search for emergent higher order themes from integration of related concepts generated the following major categories:

- 1. Safety and Survival**
- 2. Coping with Success and Failure**
- 3. Coping with Stress and Anxiety**
- 4. Undivided Attention**
- 5. Knowing Oneself**
- 6. Physical Coping Ability**

The presentation of the following results of the adventurer/ explorer sample needs to consistently refer to Figure 5.2 which diagrammatically shows the emergent concepts and categories within the grounded theory analysis.

Safety and survival emerged from three inter-related concepts; planning and goal setting, risk assessment and effective decision making, with the latter two being most substantive.

1. Safety and Survival

Table 5.9 shows the contributing key point codes and three major concepts to the safety and survival category. Such conceptual emergence provides evidence for the value of the chosen method in demonstrating the varied interpretation of mental toughness within concept formation. All three concepts emerge from an assortment of different key point codes. Effective decision making included effective decision making as a substantive code, wisdom attached to decisions, the involvement of others and the role that patience plays in effective decision making.

Emergent concept	Supporting Codes (Key point)	Source of Data Adv/ explorer Interviews Including coded key point
Effective Decision Making	Effective decision making Making decisions under pressure Wisdom from experience Making joint decisions under pressure Patience in Decision making	1,2,3,4,7,10,15,16, 19 3,18,19 1,2,3,7,10 3,10,16,19 7,15,16,20,21
Effective Planning and Goal Setting	Forward planning Being realistic Correct perception of challenge/ Taking the challenge Personal challenge Seeing the big picture Having a sense of perspective Having a sense of purpose The need to be adaptable and flexible when planning Having ambition Hitting your target	3,10 2 3,10,20 3,20 2,5,10,16 5, 7,20 15 15 5 2 2, 5, 16
Risk Assessment	Necessary risk taking Avoiding mental slips Knowing your limits Risk assessment Handling uncertainty Common sense	7,10,20,21 7,10,20 2,4,5,6,15,16 7,16,20,21 2,3,6,8,14,15,20,21 1,2,3,4

Table 5. 9 Emergent concepts and supporting key point codes in contribution of the 'Safety and Survival' category within the Adventure/ Explorer sample

Similarly, the complimentary concepts (EP & GS and RA) also include a variety of key point codes in support of each concept title.

The three concepts are perceived as essential mental toughness characteristics for successful 'safety and survival' and this supports previous work that highlights essential leadership issues required for survival in outdoor environments (Mitchell, 1983; Walker, 1996; Priest and Gass, 1997).

It is clear that participants think that such important concepts are concerned with safety and survival and making the correct assessment of a potentially dangerous situation requires mentally toughness. Many adventurers suffer fatal consequences as a result of poor planning, ineffective risk assessment and decision-making. Mental

toughness is required when making important judgements about how to successfully survive to the absolute conclusion of an adventure. Experienced mountaineers highlight meaning attached to this:

I think I try to force myself to say it's not even half way, so I've always got a lot of energy, or mental toughness left. I think the reason a lot of people get killed is they don't think of the top as half way, they think of it as most of the way. They even forget and think 'well I know I can get to the top' and that's all they focus on rather than thinking 'I know I can get to the top and back down'. So I always try and think that the top is half way. I need to believe I've still got something left and I'm sure people push 120% to get to the top sometimes too early and pay the price. Adventurer 10- Mountaineer (correct perception of the challenge)

It is actually being able to make a series of logical judgements, which enable you to have the best possible chance of success; but you also want to come back alive, that is mental toughness. Adventurer 2- Mountaineer (effective decision making)

The sample explicitly link effective decision making to pressure situations and this combined with wisdom and patience provide the main supporting codes. Mental toughness is also perceived to be an integral part of the planning and risk assessment within adventure and exploration environments. The consequences of failure are sometimes fatal and if errors are made in any one area then lives can be lost. The findings show that such concepts, particularly effective decision making and risk assessment, which form two thirds of the safety and survival category, are extremely important to understanding mental toughness in adventure and exploration.

Risk assessment is considered particularly important to mental toughness with participants identifying the need to consider the necessity of taking a risk(A7,10,20,21), avoiding a mental slip(A7,10,20), knowing ones limits(A2,4,5,6,15,16), correct risk assessment (A7,16,20,21), being able to handle uncertainty(A2,3,6,8,14,15,20,21)and four participants identified common sense as a mental toughness characteristic (A1,2,3 & 4).

2. Coping with Success and Failure

Coping with success and failure (see Table 5.10) emerged from the need to not only consider the disappointments and setbacks within adverse environments but also the need to be able to deal with success. It transpired that not all success provides total fulfilment if people are not fully extended in their skills and abilities. Ironically, for some people failing is paradoxically acceptable, as it is perceived to have been the ultimate test of ones capabilities, as long as the resultant outcome is one of survival. For some mental toughness is linked to being able to handle success (A10, 21), but for the majority (50% of sample) it is related to being able to deal with failure, either acceptance or experience of failure.

Emergent concept	Supporting Codes (Key point)	Source of Data Adv/ explorer Interviews Including coded key point
Coping with Success	Handling success	10,21
Dealing with Failure	Accepting failure Experiencing failure Perceived failure	3,5,13,16,18,19,20,21 2,3,5,7,9,10,13,16,17,20,21 2,3, 7,9,16

Table 5. 10 Emergent concepts and supporting codes in contribution of the ‘Coping with Success and Failure’ category within the Adventure/ Explorer sample

Phenomenological interpretation of such data is important as failure may not be totally negatively perceived, but rather as an important experience which is required to promote mental toughness. Dealing with failure is perceived to be important in being mentally tough, and if dealt with effectively and people learn from past experience it can result in future success, as one mountaineer highlights:

So you learn from the reasons why you didn't achieve it last time, and hopefully the second time you will achieve it. This happened to us very directly on the South West face of Everest in 1972 we did not succeed, as we did not get to the top of that mountain. But we learnt a lot and in 1975 we succeeded. Adventurer 2 – Mountaineer (experiencing failure)

Allowing the participant to fully explain their perceptions provides data that challenges common assumption, in that by experiencing failure people are still

capable of being mentally tough. One adventurer actually perceives failure to be tougher to deal with in the decision making process:

Yes it (mental toughness) can make the difference between succeeding and failing. But you can fail and still be mentally tough. In some ways it might be tougher to make the decision to and go down rather than to carry on. Adventurer 21- Mountaineer / climber (experiencing failure)

It seems perceptions of mental toughness in success and failure experiences are in need of further research, particularly in how failure experience is ultimately dealt with and explained. Phenomenological evidence suggests that it is not only required but can be essential to becoming mentally tougher within an adventure environment. Mental toughness is not all about outcomes, but more about the mental processes which guide human behaviour. Phenomenological method and IPA allows the paradox of the perception of failure to be rewarding and emerge within this investigation as an important concept. To many people not achieving ones ultimate goal is perceived failure, but to adventurers/ explorers who value personal challenge and self fulfilment as the most important motivation, having given their all and not succeeded is immensely satisfying and can be perceived as a relative success. This rather contradictory viewpoint has not been previously reported in mental toughness literature.

The findings also show that individuals do not consider dealing with success to be an important aspect of mental toughness. This is somewhat surprising as one adventurer explained that personal ego is quite possibly the most dangerous obstacle a climber needs to control whilst on expedition:

People get carried away with their own egos and the need to summit takes control over more logical judgements. People lose it and many people have unfortunately lost their lives because of their obsession to get to the top. I have seen it and witnessed it on both Everest and K2 (Adventurer 10, Climber)

IPA allows the researcher to empathise with the climber and understand the role that ego may play in such an experience. Having invested so much personally in the experience, having the opportunity to possibly summit and gain public recognition and peer status and not being perceived as a failure are all important factors which fuel ones ego. Being mentally tough enough to deal with such matters and deciding that survival is the most important thing and keeping it in perspective when on expedition and 'living the moment' must be a very difficult exercise in self control. It is very surprising from the data that more examples were not forthcoming which highlighted the need to 'deal with success' as opposed to 'failure' given its ability to distort ones rational thought processes and behaviour. Attribution research within the adventure paradigm in terms of understanding the psychological and emotional consequence of success and failure is scarce, and such findings may provide an important focus for future research in the area.

Research effort may wish to target how participants attribute success and failure within adventure situations, consider possible attribution error in failure situations and focus on developing strategies which assist participants to apply the correct attributions to either internal or external loci of control, which may ultimately influence their future actions and emotions. Dealing and coping with both success and failure are perceived as crucial characteristics of mental toughness and results indicate that how people deal with failure is perceived as much more important than dealing with success.

3. Coping with stress and anxiety

Four concepts emerged (see Figure 5.2), and included a common theme linked to coping with aspects of stress and anxiety. Three substantive concepts emerged and these were coping with stress situations, coping with anxiety and the ability to suffer.

One less supported concept, 'coping with low negative arousal' (handling complacency and boredom) also emerged. When environmental conditions put ones life at risk and there is a high level of uncertainty attached to eventual outcomes the need to cope and deal with stress is mentally demanding and results confirm this.

The most substantive concepts are all directly related to ones ability to suffer.

If one fails to adequately cope with stress and anxiety then one may expect to suffer either physically or psychologically. Coping with anxiety is related to cognitive factors such as personal worry or worry about others (A2,16), fear (A5,10,15, 16,20), thinking about negative consequences (A10,11,15,16,20,21), or dealing with expectations and dealing with perceptions of death (A2,3,10,13,15,20,21).

Coping with stress situations was largely linked to dealing with prolonged pressure over time (A2,3,4,7,10,13,15,16,17,18,19,20,21),being composed under immediate pressure(A2,3,7,9,10,13,14,15,16,17,20,21) and dealing with pressure from colleagues (A2,3,10,13,16,17,20,21). The method allowed pressure to be explored in more detail and the phenomenological approach found that sources of pressure differ and need to be considered in different ways and may have different coping strategies attached to them. The following selective examples emerged:

It's being composed under pressure and dealing with the immediate situation effectively and getting on with it (2), Having to tolerate others is very mentally demanding (10) and having the pressure from colleagues on you is a massive burden (13)

One mountaineer explains:

I was just thinking of Kachengchung, we were two and a half months working at it. Where mental toughness came in was to stay with it. Adventurer 16- Mountaineer (dealing with prolonged pressure)

The meaning attached to the statement above considers that mental toughness has enduring qualities which demand that individuals are able to sustain their mental resilience over a prolonged period of time as opposed to a short term 'one off'

performance. Truly mentally tough individuals may be those who can 'stay with it' and manage to display enduring mental toughness over a long period of time in different situations.

The ability to suffer and prolonged stress are aspects of mental toughness that polar expeditionists require in abundance. These are highlighted in the following quotation by an experienced explorer:

Part of it was the duration of the trip because it made it so very hard mentally. We were stuck with the discomfort and the effort without many distractions. It was like running a long distance with massive effort without the terrain changing. We were experiencing long periods of no change whatsoever, where you were left with just having to keep going, which made it very difficult. Adventurer/ Explorer 17 – Polar Explorer (ability to suffer / prolonged pressure)

The quotation takes on slightly different meaning attached to the prolonged nature of mental toughness as this included the element of discomfort and boredom/ monotony of the environment. The environment was somewhat uninspiring and lacked variation of challenge apart from a huge physical and mental effort with the threat of fatal consequences if one stopped moving. From a phenomenological standpoint there seems little option than to keep going as the alternative option (death) seems incomprehensible.

Given the results, there is a need to consider different types of mental toughness related to duration of events, the nature of the event (going solo as opposed with support teams) which involves the tolerance of others, and the type of adventure experience being itself in terms of task demands. Dealing with specific aspects of stress and anxiety are perceived as major components of what mental toughness is within this sample.

A mountaineer commented on one experience, directly relating the concepts of 'dealing with anxiety' and 'coping with stress situations':

In 1992, I was caught in a rock fall avalanche. Rocks were blasting around me and there was nothing I could do. There were blocks the size of tables smashing next to me and showering

me in shrapnel. I was just hanging on my ice axes on this 60 degree slope. I remember thinking shit... I thought one of those blocks any minute now is just going to scrape my arm and I'll see blood spurting out of my shoulder because my arm will have been ripped off.
Adventurer 10- Mountaineer. (composure under pressure)

The above quotation provides graphic meaning to what a life and death situation entails within high level adventure. Although the mountaineer had not a great deal of choice to hang on and survive he recovered and went on to summit. The mental toughness is not all about surviving such experiences but having the composure to regroup oneself and push on. It also demonstrates that even the world's best mountaineers experience intense moments of fear and worry. Yet, they are able to recover from these where others may not pursue future events which may provide further negative experiences.

Previous work linked with stress and anxiety experiences within adventure have primarily focused on the antecedents of stress and adventure (Ellis, 1973); sensation seeking (Zuckerman, 1979); flow experience (Csikszentmihalyi, 1975, 1990); levels of fear (Mortlock, 1984), and the adventure experience paradigm (Martin and Priest, 1986). Most previous work has focused on the reasons 'why' people engage themselves in adventure/ exploration experiences, yet fails to address how people cope with such experiences or the mental toughness related to such participation. Dealing with stressful aspects of adventure is perceived to be mentally tough and links need to be established to identify exactly which aspects adventurers need to focus on, to be able to develop their mental toughness, which may one day increase their safety and survival chances.

4. Undivided Attention

The category emerged from two substantive concepts 'full attention on task' and 'dealing with external distractions' in high-risk environments. Table 5.11 shows the contribution of the supporting key codes within concept and category emergence.

Emergent concept	Supporting Codes (Key point)	Source of Data Adv/ explorer Interviews Including coded key point
Dealing with External Distractions	Coping with external distractions Combatting homesickness	2,3,5,10,13,15,16,18,20 2,8,16
Full Attention on Task	Having full attention Mental readiness Dealing with the present	2,3,4,5,10,14,16,17,20,21 4,5,10,21 5,7,9,13,15,20,21

Table 5.11 Substantive concepts and supporting key point codes in contribution of the 'Undivided Attention' category within the Adventure/ Explorer sample

Both concepts were supported by over 50% of the sample group with the substantiated key point codes assuming the concept titles in both cases. Selective adventurers / explorers (A2, 3, 5 and 10) perceived that both major concepts were important to mental toughness.

Obviously, in high-risk environments having undivided attention on task is quite possibly one of the most important psychological skills that can be linked to mental toughness. Without it errors are made and consequences may prove fatal. Whether on a rock face, travelling over thin ice on the polar-regions, or navigating on rough seas, undivided attention is vital for survival. Full attention on task is however dependent on the influence of distractions. The two concepts are reciprocally related and if one has total attention on task then distraction should be minimised. Perceptions of external distractions included:

'having to tolerate others around you' (2), checking how other climbing teams are doing(5),keeping an eye on the weather(10),not thinking of people back home(13), thinking of possible consequences(15),letting the summit take over(16),worrying about the past or the future(18) and dealing with the death of a fellow climber whilst trying to survive myself'(20).

(Interview source identified in brackets)

People are aware of the consequences if they do mentally switch off in life threatening situations. This was reflected in one quotation from a military officer fighting for his life on an escape and evasion mission:

There's this thing where you've got to have full concentration on putting one foot forward in front of the other and pushing on...but you know if you switch off and try and clear that you know you're just going to stop and not continue. Adventurer 15 – Military officer (full attention on task)

Having full attention is arguably more important in life or death situations than compared to competing in top level sport and the perceived importance of the mental skill and the potential consequences of not paying full attention to task are highlighted in the previous example. Other selective examples in support of the concept of 'full attention on task' include:

You need to be fully alert and focused in critical moments of potential danger (2), full concentration is what mental toughness is whilst on expedition (3), paying attention to detail is always difficult when fatigued (4), staying attentive when sick at altitude is really mentally demanding and can decide whether you live or die (10), if we switched off coming down we were dead simple as that (20).

An experienced mountaineer's comments reflect the conceptual links between themes such as decision making, being focused, tolerance of others and dealing with external distraction:

When the weather is lousy, the conditions seem to be bad, members of your team or your colleagues want to go home ... actually maintaining focus against and within all that is the need to be making sensible decisions. Adventurer 2 – Mountaineer (effective decision making / tolerance of other/maintaining focus)

The value of the phenomenological method in provision of rich and detailed data as exemplified in the above example allows such conceptual links to emerge through key point integration. It is clear that effective decision making is dependent on several important factors of which having full attention on task is a fundamental. Having full attention on task and being able to deal with external distractions may be viewed as two separate psychological issues, yet deserve to be seen as reciprocal concepts.

The work of Martin & Priest (1986), Priest, (1990, 1999) and Priest & Gass, (1997) consider important concepts of decision making, risk, stress and anxiety, competence and confidence in isolation and should attempt to consider the role that all play in the conceptualisation of what mental toughness is within the adventure paradigm.

To date, no attempt has yet been made to link concepts in terms of what they are and their proposed relationship to mental toughness as this study has provided.

Studies which focus on the 'lived experience' of adventurers / explorers within their own world are almost non-existent. Overall, having 'undivided attention' is perceived as a major aspect of mental toughness by adventure/ explorers and may well be related to the following category concerned with the aspect of 'knowing oneself.

5. Knowing Oneself

Knowing oneself emerged as a category from concepts and key point codes which all related to aspects of the self (see Figure 5.2 p.131). Mental toughness is perceived as a personal characteristic and a major aspect of being mentally tough is related to knowing oneself through being independent, self sufficient, self aware, being balanced, having self control, having personal responsibility and most importantly having an abundance of self confidence and self belief.

Table 5.12 shows the substantial support for all the emergent concepts and the varied interpretations that were offered through phenomenological inquiry. Having an abundance of self confidence is considered to be a major prerequisite for mental toughness by 13 of 21 (60%) of participants interviewed. Examples include:

It is just having the self confidence to know you can do it when required (2), you need to believe in yourself when it gets really tough (2), being confident is what being tough really is (9), having confidence and being tough mentally are inseparable (13), I needed to be confident and believe in myself or I would not have finished it (18), when it gets really tough and you don't believe you will survive you don't (20).

Emergent concept	Supporting Codes (Key point)	Source of Data Adv/ explorer Interviews Including coded key point
Self Confidence and Self Belief	Self confidence Positive self talk Having self belief	1,2,3,4,5,8,9,10,13,16,18,19,20 19 2,5
Self Control	Self Control Patience	2,7,10,16,18,21 3,21

	Emotional control	5,7,15
	Dealing with death	2,7,10,15,21
	Dealing with ego	2,5,7,10,21
	Being unemotional	10
	Dealing with anger	10
	Coping with elation	10
	Emotional drive	5
Independence & Personal Responsibility	Being alone	10,15,17,20
	Personal responsibility	20,21
	Independence	2,3,4,9,12,13,14
	Being assertive	20,21
	Being self sufficient	2,6,8,9,10,12,14,15,16,17,18,20,21
	Being single minded	3,6,8,10,12,13,15,21
Self Awareness	Being Balanced	1,2,4,8,12,13,16,20
	Knowing oneself	2,4,5,8,10,13,17,19,20
	Inner awareness	2,15,16,20,21

Table 5.12 Substantive emergent concepts and supporting key point codes in contribution of the 'Knowing Oneself' category within the Adventure/ Explorer sample

Self control was considered to be important and directed towards many different aspects of the lived experience (dealing with death, having patience, dealing with ego, emotional control etc). It was somewhat surprising that issues of self control related to emotion, anger and dealing with elation were not considered to be that important in relation to what mental toughness is perceived as. A highly respected climber explains the importance of self-confidence to mental toughness. It implies having courage in your convictions and your ability to deal with situations that are thrown at you:

I think mental toughness is the ability to hold your horses and stand your ground and be confident in yourself, but also the ability to absorb everything that is coming to you.
Adventurer 5-Climber (self confidence)

Knowing oneself is dependent on self awareness and being self aware and well balanced was and considered very important to metal toughness perceptions as a mountaineer explains:

It is very important that the individual is self-aware. Self-awareness is one of the most important things which helps you to, both achieve you're ambitions and to stay alive. For that matter to stay balanced is part of staying alive. Adventurer 2 – Mountaineer (knowing oneself)

Mental toughness is perceived to be linked with being self-responsible and self-sufficient through the emergence of the key point codes 'being independent and

personally responsible', 'self sufficient' and 'single minded'. One adventurer explains being positive and staying in control is related to self belief:

I think you need to turn negatives into positives along the way and to keep going and not give up. It is one of the most important things to keep looking inside you and finding that little extra strength to stay in control. The depths of courage that people have when they need to find it are immeasurable.

Adventurer 18- Adventurer (self control)

Having self-control is perceived as not only a psychological but also an emotional characteristic linked to mental toughness. The emergent key points included self-control (A2,7,10,16,18,21) control of ones ego(A2,5,7,10,21), and patience(A3,21), together with a set of less supported emotional themes such as dealing with elation, anger, death, and emotional drive. Ironically one mountaineer poignantly offers:

It is very important to control the ego. The thing that I have noticed more within mountaineering more than anything else is that people who get too over confident and too driven by their own ego usually end up getting killed.

Adventurer 21- Mountaineer (control of the ego)

Such meaningful data is linked to the previous concepts of 'dealing with success' and 'self control'. The need for people to be mentally tough enough to be able to deal with ego driven internal drives that distort rational decisions, which protect the person from misjudgements or potential danger are only acknowledged by 25% of the sample; a concerning statistic.

When external factors have to be considered there is a perception of a lack of control and it is perceived to be mentally tough in dealing with such issues as an expedition leader comments:

As an expedition leader mental toughness is actually coping with all the extraneous worries, not just of you but also of other people. The hardest thing of the lot is when people are out in front and doing things which are completely out of your control and you know they are in very severe danger and knowing that they might not come back down alive, and coping with that situation.

Adventurer 2 – Mountaineer (dealing with external distractions / combating worry about others/ self control/ dealing with stress situations)

The results show direct evidence of how different concepts are related in demonstrating what mental toughness means to this mountaineer, but more than anything, the thought of a potential fatality. It is a source of external cognitive anxiety that is imposed on the leader; it involves a sense of shared responsibility and a concern for others.

The emergent category of 'knowing oneself' is down to individual sense of self and mental toughness is related to how much people are self aware, personally responsible for their actions, their level of confidence and belief in what they perceive they can achieve and the self-control they apply in difficult situations.

Adventure and exploration is about dealing with perceptions of risk and difficulty within environments when outcomes are uncertain. Martin and Priest (1986) explain outdoor behaviour is based on the relationship between the variables of risk and competence. Challenge requires the presence of both situational risk and personal competence engaged in an effort to resolve uncertainty.

To successfully engage in challenging outdoor adventure and exploration and to demonstrate mental toughness the current findings demonstrate that 'knowing oneself' is crucial to the process.

It is centrally related to perceptions of risk assessment, decision making, having self confidence and perceived competence, and knowing how to deal with success and failure. Knowing oneself is also vital to survival when confronted with a highly stressful situation, such as when questions are asked about ones ability to win through an adverse and extremely challenging situation.

7. Physical Coping Ability

The final category within the adventure/ explorer sample emerged from two strongly related concepts, 'physical fitness' and 'coping with physical demands' (see Figure

5.2, p.131). By its nature high-level outdoor adventure requires a high level of physical fitness. The sample included many top-level mountaineers, climbers, polar explorers and adventurers. To survive and achieve their targets the participants needed to be extremely physically fit otherwise their lives are at risk. Key points emerged within the physical fitness concept such as the substantive code of supreme fitness (A2,4,6,7,9,10,15,16,20) and the physical-mental link(A2,3,19). Within the coping with physical demands concept, substantive key points included fighting spirit (A2,3,7,10,16,19,20,21) and coping with physical discomfort (A2,3,4,6,8,10,11,12, 13,14,15,16,20,21). The demanding nature of activities such as high level mountaineering/climbing, long distance walking or cycling and Trans-Atlantic sailing links physical toughness to mental toughness. Participants reported that being extremely physically fit was a prerequisite in preparation for any mentally demanding adventure.

Selected participants endorsed such thoughts:

At the end of the day you have to have the physique and the physical ability to do it. No matter how much you want to get home if you physically can't lift your legs anymore then you are not going to make it. Adventurer 16 – Mountaineer (supreme fitness/ physical state)

The physical fatigue when you actually force your body on when you set yourself objectives, like I'm going to take ten steps without taking a rest you and you get to number seven and you feel absolutely knackered, but you keep going the three paces more to ten, and you stop, and you pound your heart out and then you have to go and do it all again. That is the physical kind of toughness. Adventurer 2 – Mountaineer (supreme fitness/ physical state)

The views on the mind – body link are well summarized by the following quotation from a highly experienced adventurer that also links ones physical state to the ability to make quality decisions:

I think they're intermeshed. I mean obviously if you are absolutely totally knackered that actually weakens your mental toughness. If you're totally mentally knackered or you are physically ill you are more likely to make mistakes mentally. A person who is mentally very, very tough has a better chance of overcoming physical disability. The person who is mentally tough can take him/herself further and go on making rational decisions in extraneous and difficult circumstances. The person who is less mentally tough is going to make wrong

decisions at a much earlier stage. Adventurer 2- Mountaineer/Climber (physical – mental link)

It is clear that the mental – physical relationship is perceived as symbiotic and the participant attaches meaning to the way that a persons mental and physical state are directly related to safety and survival as they are the main control centres for effective decision making, particularly in difficult circumstances. This is extremely important in adverse situations when people are taken to their physical and mental limits.

Activities that require huge amounts of physical and mental reserve such as prolonged walking, cycling, rowing, sailing or mountaineering may differ in their demands, dependent on the intensity and the duration of the activity being performed. As a general rule, the higher the intensity the higher the fitness level demanded. The higher the intensity the probability is that the person is going to experience physical discomfort at earlier stages of the activity and need to deal with physical discomfort for prolonged periods. However, such generalisations need to consider individual differences in physiological status (i.e. fitness levels of participants).

This section of the results has considered the findings of the adventure/ exploration sample. The process of exploring data through phenomenological method and preliminary IPA and investigating the connections between key codes and emergent concepts is fundamental to the development of a well grounded theory. The outcomes of the adventure/ explorer sample interview data is diagrammatically shown in Figure 5.2. It shows how the interrelated grounded theory process begins with phenomenological interview data and develops through emergent key codes, concepts and categories and then to eventual grounded theory, which will be discussed in the following discussion chapter.

Overall, the perceptions of mental toughness resulted in six emergent categories,

safety and survival, knowing oneself, undivided attention, coping with stress and anxiety, coping with success and failure and physical coping ability. These were supported by 16 concepts and 78 key coded themes. The emergent central core category which most suitably relates them all and explains mental toughness as an abstract concept is 'the psycho –physical self sufficiency to survive'. The author feels such a conceptual label more suitably relates to the situational and personal demands of the adventure / exploration environment which participants have to endure.

5.5 Conceptualisation and categorisation of mental toughness within the Elite Coach sample

The search for emergent higher order themes from integration of key codes and related concepts generated the following major categories:

- 1. Motivation and Commitment**
- 2. Self Confidence and Belief**
- 3. Effective Mental Application**
- 4. Dealing with Event Pressure**
- 5. Training and Situational Demands**
- 6. Physical Coping Ability**

The complete index of how emergent key codes and concepts support the above categories is located in Appendix B, Volume 1, and shown in Fig 5.3.

As in the adventure / explorer sample, the interview data was analysed using IPA within the emergent open coding in order to create key point codes. These emergent themes were then further analysed for more meaningful interpretation of data and then emergent clusters of related themes were constructed based on grounded theory coding techniques and meaningful IPA.

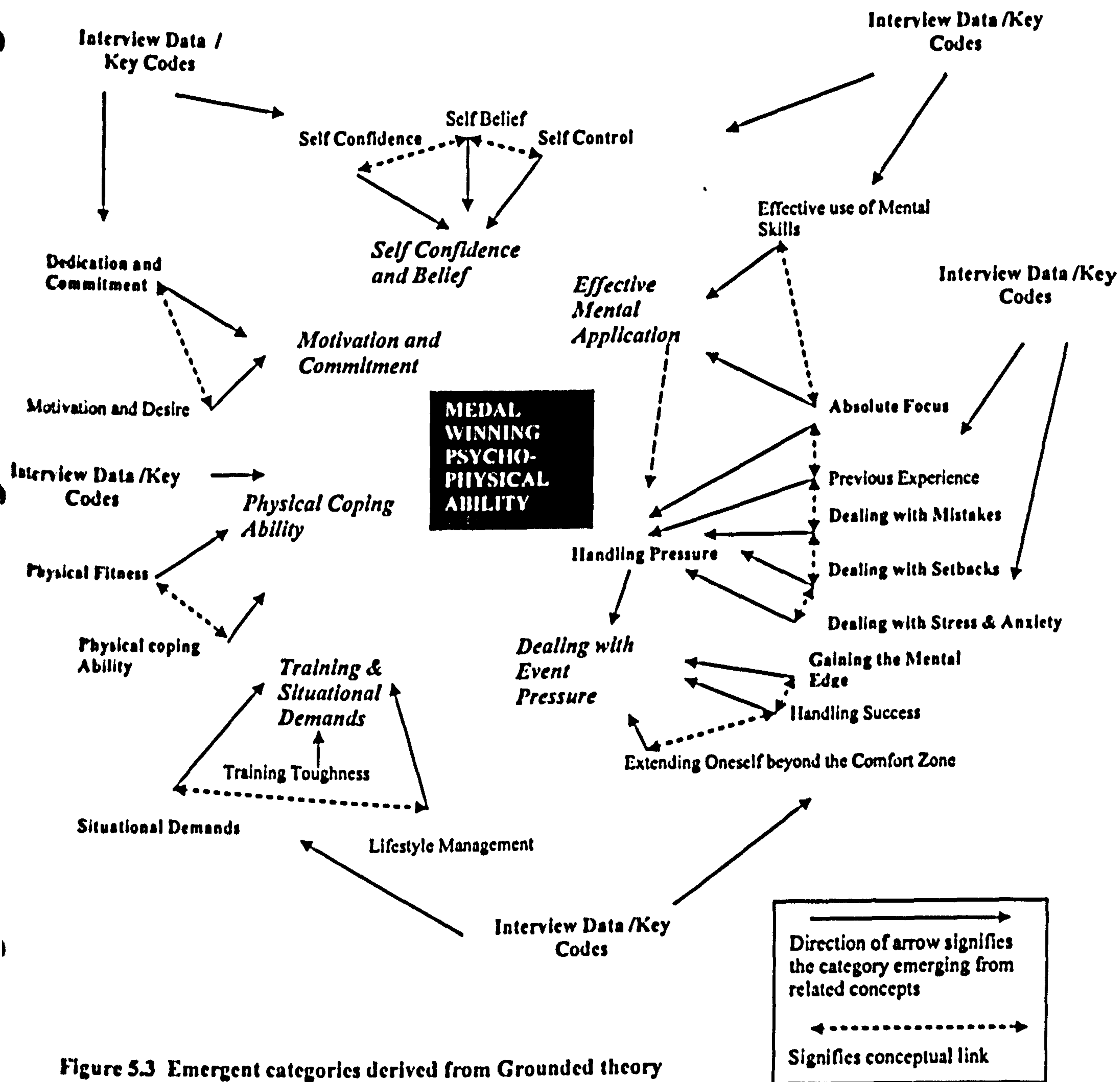


Figure 5.3 Emergent categories derived from Grounded theory analysis of the Elite Coach Sample (n=33)- substantiated concepts are in bold.

1. Motivation and Commitment

Motivation and commitment emerged from two substantive concepts 'motivation and desire' and 'dedication and commitment'. The 'dedication and commitment' concept emerged from key point codes of dedication (EC4,6,8), commitment

(EC6,8,17,27,30,32) and self-discipline(EC 4,27,30,32). Motivation and Desire was heavily supported through the substantive codes of determined nature (EC2,4,8,10,12,13,19,20,24,28,30), being independent and responsible (EC3,4,5,8,10,12,14,22,23,28) and the will to win(EC4,10,13,23). Lesser substantive codes included self motivation, having the incentive and wanting it badly enough (see Appendix B, Volume 1).

Such concepts emerged early on in the data analysis and were substantiated throughout, particularly determination, commitment and being independent and responsible. The concepts are supported with the following selective elite coach quotations with complimentary IPA, to justify the key coding and interpretation of the emergent concept/category inclusion (see Table 5.13).

Direct Data Source	Interview Text	IPA – Key Code transformation	Concept / CATEGORY
Elite Coach 31 Equestrian	<i>They would all like to win the gold medal, but there are those who really, really want it and are going to do everything they can to get it, and there are those who would love to have it, in terms of it landing in their lap and aren't really prepared to push for it, which personifies personal drive.</i>	Drive and desire is perceived to be an intrinsic quality that people have which directs their behaviour and actions (sometimes in a maladaptive way) in trying to achieve a desired goal. The coach implies there are very few athletes who are prepared to give everything in the quest to fulfil their ambitions. The meaning attached to such a desire and the personal drive which fuels such behaviour is viewed by the coach to personify mental toughness. It is considered that lesser athletes lack such psychological characteristics and differ in terms of the intensity of the personal drive and behaviour which is directed towards the outcome goal (drive and desire)	motivation and desire MOTIVATION AND COMMITMENT
Elite Coach 17 Swimming	<i>I think it is total commitment; there is no doubt about that.</i>	Explicit statement reinforcing that having the total commitment is what mental toughness is all about (commitment)	dedication & commitment MOTIVATION & COMMITMENT

Elite Coach 13 Badminton	<i>It is the 'will to win'. That is what we probably dress mental toughness up as, the 'will to win'. I think if you have that will to win everything else is easy isn't it? And you will push it hard.</i>	The coach accepts that mental toughness may well be used synonymously by some coaches and the 'will to win' is perceived as a prerequisite for mental toughness. If one has the 'will to win', it is assumed by the badminton coach that an athlete has a core element of what it takes to be mentally tough. Additionally, the statement links in the ethic of hard work being characteristic of such an athlete. (will to win)	motivation and desire MOTIVATION AND COMMITMENT
Elite Coach 10 Wind-surfing	<i>One of the most important things is their will to win, their mental toughness that comes with all that</i>	The coach is implicit in stating that mental toughness may be a by product of the will to win. (will to win)	motivation and desire MOTIVATION AND COMMITMENT
Elite Coach 5- Canoe Slalom	<i>I talked to him about MT but I wasn't responsible for him. He's looked after himself over the last year more than he has done ever before</i>	The coach perceives mental toughness is more related to athletes who are more independent and are able to look after themselves not only in training but in competition itself. (Independent and responsible)	motivation and desire MOTIVATION AND COMMITMENT
Elite Coach 10 – Wind-surfing/ Sailing	<i>They are making all the decisions themselves, you have to develop that independence in the athlete and that independence has to reflect in everything that they do. Windsurfing and sailing are such individual sports, you are not at the side of the track with a loud hailer, you are sitting at the bottom end of the course, and they are out there doing it for 45 minutes alone.</i>	The coaches words reflect the fact that athletes need to become independent and they need to relinquish control of them in important decision making processes linked to sailing strategy and tactics. It is not the coach who will ultimately earn the medal it is the athlete. An athlete who is dependant of the coach for important decisions will never win a medal as they will lack the skills to apply such strategies when in an alone condition. Mental toughness is perceived to be all about being able to go it alone in such independent disciplines; it's a matter of sink or swim. (Independent and responsible)	motivation and desire MOTIVATION AND COMMITMENT

Table 5.13 Interview, key code and concept emergence of Motivation and Commitment data for the Elite Coach sample

The most substantive key codes were having a determined nature, being independent and responsible and having total commitment. Having a determined nature was largely (90%) supported by male coaches and included such statements as:

It's the sheer determination when faced with adversity that makes them tough(2); being determined to get to the top and staying there(4); by nature she is pure determination(12);

nothing will ever beat her determination to be the best, she had it all (20); absolute determination to the end is what got the medal (28).

A determined nature implies that such a characteristic is a dispositional feature of mental toughness. In a similar way, being totally committed demands action directed to a goal over a period of time that requires consistent enduring behaviour. Selective coach perceptions which linked commitment to mental toughness included:

I think the ones with the stickability and the commitment that have mental toughness (6); if they had a 'die hard' attitude, took more responsibility and total commitment then they would show mental toughness (17); I think, it is total commitment, there is no doubt about that (27); Get him in the pool and when he trains it is like he is on a mission, totally committed (30).

Such findings totally support the work of Middleton *et al.* (2004), who identified the two factors of goal commitment and perseverance within their mental toughness theoretical model. It requires the act of binding oneself to a goal or a course of action and having persistence in or remaining constant to purpose, idea or task in the face of obstacles, discouragement or adversity (*ibid*). The concept has also attracted support from Bull *et al.* (2005) who include the general dimension of 'dedication and commitment' within their mental toughness pyramid model.

The findings demonstrate without doubt the category is an extremely important conceptual ingredient of what mental toughness is and it enjoys wide support from previous research. However, they do not provide details of how people become or achieve such a motivational intensity to enable such levels of mental toughness to be achieved. Future research should attempt to investigate how it is developed or nurtured.

2. Self Confidence and Belief.

The category was supported by three substantive concepts; self confidence, self belief and self control, the first one being perceived as the most important.

Within the self confidence concept the two main emergent key points were 'self confidence' and 'confidence in ones ability/ perception of ability' (see Table 5.14). These were supported by various other minor themes such as 'winning confidence', 'technical confidence' and 'confidence in the training programme' which demonstrate that self confidence may be a multi-dimensional concept.

Emergent concept	Supporting Codes (Key point)	Source of Data Adv/ explorer Interviews including coded key point
Self Confidence	Self confidence Perception of ability Confidence in ability Confidence in training programme Confidence in coach Winning confidence Technical confidence Specific confidence	1,2,9,11,12,13,14,16,17,21,23,24,25,27,32,33 3,5,6,9,14,15,30, 2,3,9,12,13,16,17,20,23,24,30,32 23,30,32 23 6,8,32 13,20,23 21
Self Belief	Self Belief	1,13,17,20,21,25,32
Self Control	Self control Technical control Being patient Control of ego Emotional control	8,9,12,16,23 5,8,9,20 3 12,13,20,23 1,13,11,20,21,23

Table 5.14 Substantive emergent concepts and supporting key point codes in contribution of the 'Self Confidence and Self Belief 'category within the Elite Coach sample (females in bold)

Over 90% of the sample highlighted self confidence as an extremely important aspect of mental toughness. The results offer support for Goldberg (1997), who acknowledges that confidence is derived from many areas such as physical preparation, the training environment and having a coach who believes in you. It is important to have confidence from being physically fit and having a well-structured training programme as one coach points out:

If they get fit then the confidence comes, which actually gives them mental toughness, because then the confidence is there and I think confidence and mental toughness are really confidence in a lot of cases. Elite Coach 13- Badminton (self confidence)

IPA implies the two concepts are inseparable and when confidence is high it intensifies the degree of mental toughness within an athlete, even when they suffer a setback such as a defeat or an injury and need to perform well shortly afterwards.

A top level cycling coach reinforces this belief:

I think mental toughness might almost be regarded as confidence. Because, I think that if you are confident you are able to succeed and you are able to come back up, even having suffered defeat or you think that although I am injured I can still win. I think that confidence is what leads to the quality that makes somebody feel invincible and gives him or her that impression that they can go out and win. When you thought everything was down on them they still believed in themselves, and I think mental toughness and confidence are very strongly linked.
Elite Coach 32 – Cycling (self confidence / self belief)

The coach is attempting to explain that mental toughness is demonstrated in very similar behaviours to that demonstrated by highly confident athletes. Self confidence may well be considered by coaches as a core prerequisite for mental toughness, and without it athletes struggle to be mentally tough.

However, it is the perceived confidence in ones own ability that coaches emphasise as the major factor. Thinking that you have the ability to perform is vital and this maybe is what over time fuels ones self belief.

A medal winning female coach at the 2002 Commonwealth Games comments:

I think self-confidence is part of it all. I don't see self-confidence and mental toughness as two separate things. I think part of resilience is if you know yourself well as a person and you have a strong sense of identity, and you know that you can cope, you tend to have the self-confidence within you. It all comes from knowing yourself, recognizing situations and knowing that you have been there before. Then, being able to react, knowing that you can react appropriately and cope with it all effectively.
Elite Coach 14 -Field Hockey (self confidence)

The coach attaches more meaning to the relationship with 'knowing oneself' as an athlete and being true to oneself and being sure of ones identity. If this is achieved an athlete will learn to trust themselves, believe in themselves and not doubt oneself in a difficult situation, which is basically having absolute confidence in oneself. This supports recent work by Bull *et al.* (2005) who identified a general dimension of

'belief' which consisted of resilient confidence (tough character) and robust confidence (tough thinking) within elite cricketers.

The following quotation personifies many examples that coaches offered which directly relates self-confidence /self belief with mental toughness:

Building of confidence is what leads to real mental toughness. The mental toughness is the fact that they are able to go on that line and do their best performance. Now whether that best performance is only enough for gold, silver or bronze it doesn't really matter. It is mental toughness because they have been able to go out and on the day requested and do what they feel is their best performance. Their physiological best performance can be hindered by their psychological belief in what they are able to do. I think that is purely confidence. If they believe that then there are no distractions, you can't ask any more than that. Elite Coach 32- Cycling (self confidence)

Results demonstrate that coaches refer to self-confidence much more than self-belief although the terms maybe perceived as very similar. Self-belief may be more deeply embedded psychologically than confidence and becomes an established thought pattern as a result of confidence reinforcements. When going for an Olympic Gold medal it is considered as a vital mental toughness factor as two coaches point out:

At the 1996 Olympics, she knew that she was expected to win and she was out there and it wasn't a front with her because we knew her so well, it was what she really absolutely believed. She believed she was the best, she believed she had taken all the toughness stuff on board as it were and she was able to cope with it. Elite Coach 20 –Canoe Slalom (self belief)

I think when you do something as well as she does, she has got to have so much belief and confidence in herself that she is thinking 'well surely I can get that'. Elite Coach 17 – Swimming (confidence in ability/self confidence/ self belief)

Having self-control and maintaining control is consistently related to mental toughness (Bull *et al.*, 1996; Goldberg, 1997; Lochr, 1991; Maynard, 1995) and this concept also contributed to the category. Self control emerged from a number of key points which indicated that control was required to be addressed in a variety of ways such as mental control, technical control, displaying patience; emotional control and controlling ones ego (see Figure 5.4).

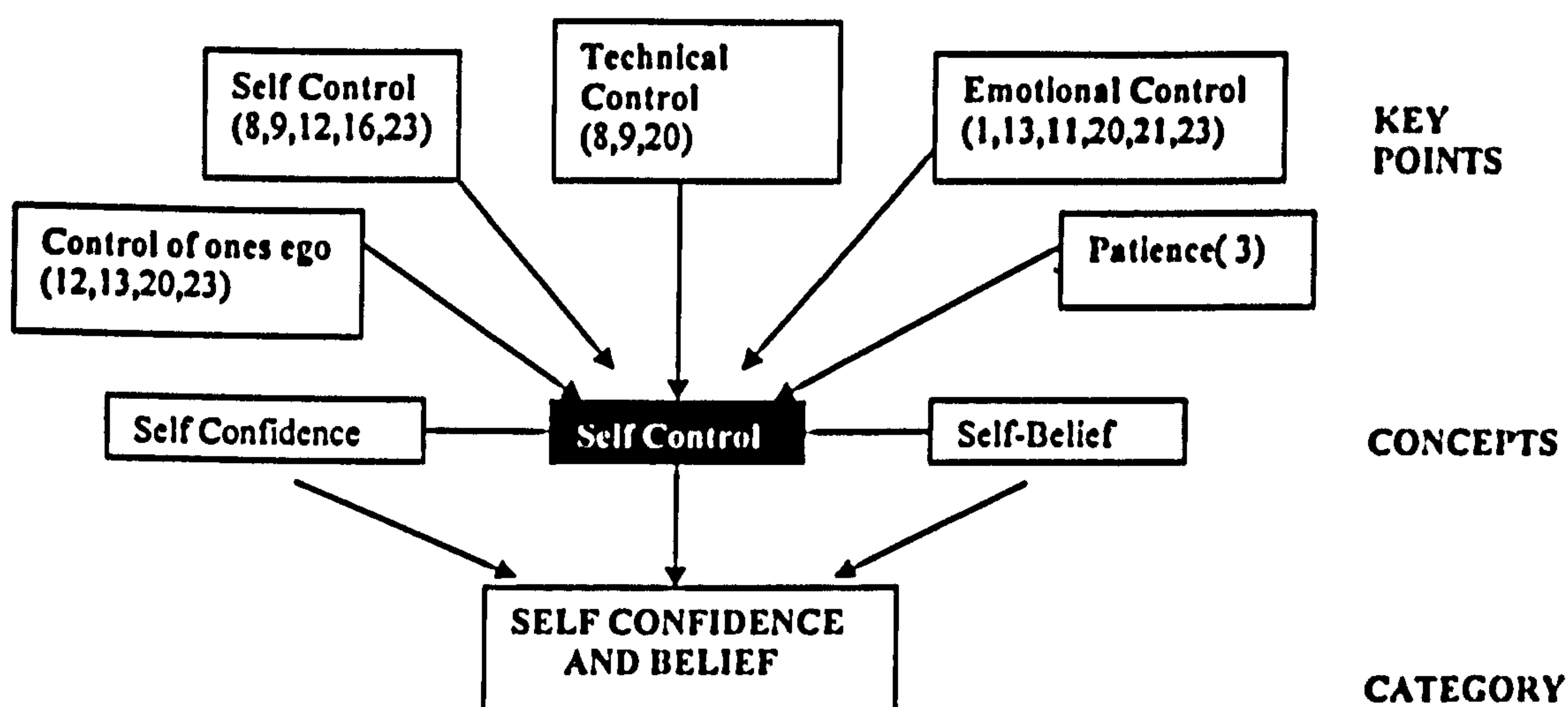


Figure 5. 4 The emergence of Self Control as a concept and its contribution to the Self Confidence and Belief category. (Numbers in brackets are identified Elite Coach Interviews –Females in Bold)

Understanding that certain aspects of performance are external, situational and not totally controllable is important so athletes avoid being distracted from ‘performing to the best of their ability’, as highlighted by an Olympic sailing coach:

There are times when you can't control things, like when someone does actually out-perform you and that is not within your control. So statements like control the controllables, are very valid to a point, but at the same time what we try and encourage people to do is be in a position where the things outside of their control don't matter any more. Elite Coach 8- Sailing (dealing with worry over performance)

Coaches also highlight that controlling ones ego is important for elite athletes who may well lose focus on their training and competitive performances if their ego's become more dominant than focusing on more important matters. Healthy egos are positive and important for ones self esteem but when a person's ego dominates and influences behaviour in a negative manner then it becomes unhealthy and performances may well slump. An Olympic coach attributes one Olympic failure purely down to the athlete not being able to control their ego:

I think it was to do with not controlling her ego, she didn't just want to win it, she wanted to win it by a mile. She knew she was going to, not only had she been favourite for some time,

but also all her results up to that time had demonstrated that she was going to win it really comfortably. Elite Coach 20-Canoe Slalom (control of ego)

Another elite Badminton coach supported the belief that ego can interfere if not controlled:

Sometimes you set them on that pedestal, they start believing their own egos a bit and saying look I'm the best in the world. You know, we want them to be the best in the world and you boost them up, but when they start believing it and don't actually get down to doing the work then that's problematic. Elite Coach 13- Badminton (control of ego)

From a phenomenological perspective maintaining control is multi-faceted and includes many potential issues which require careful regulation. Ego is a very important psychological component and many top level athletes use their egos to their advantage in terms of boosting their self confidence. But it is only useful if it is one that is stable and under control. Two coaches support this belief:

Yeah, you have got to have ego, it is a very big thing but it has got to be a controlled ego. Elite Coach 23- Swimming (control of ego)

One of the outstanding things that strike you about these guys certainly the successful ones is that they are very stable mentally. Elite Coach 9 - Canoe Slalom (self control)

Overall, an extremely important category which is central to what coaches perceive mental toughness to be and one which also receives substantial support from previous studies.

Psychological concepts are reciprocally related and in some ways symbiotic in the sense that they support each other. Many connections emerged between concepts and categories in this category and this was also demonstrated when considering the emergence of the categories 'effective mental application' and 'handling event pressure'.

3. Effective Mental Application

Effective mental application emerged as a category through the perception that coaches believed mental toughness was strongly linked to the ability to effectively use

mental skills. 'Handling event pressure' was specifically related to being able to apply such skills within the competition environment and deal with high-pressure situations (see Figure 5.3).

Without doubt, coaches perceived achieving 'absolute focus' (>50% sample) as the most important mental skill related to mental toughness. Support for the concept was reinforced as 'dealing with external distractions' emerged as the most substantive key point within the 'use of mental skills' concept.

Figure 5.5, shows how relevant key codes support the 'absolute focus' concept and the emergent category. The category has obvious connections to the related concept 'handling pressure'. Concepts within it referred to 'dealing with setbacks', 'dealing with mistakes', 'dealing with external distractions' and 'dealing with anxiety' all of which are connected to being focussed and avoiding being distracted by external events.

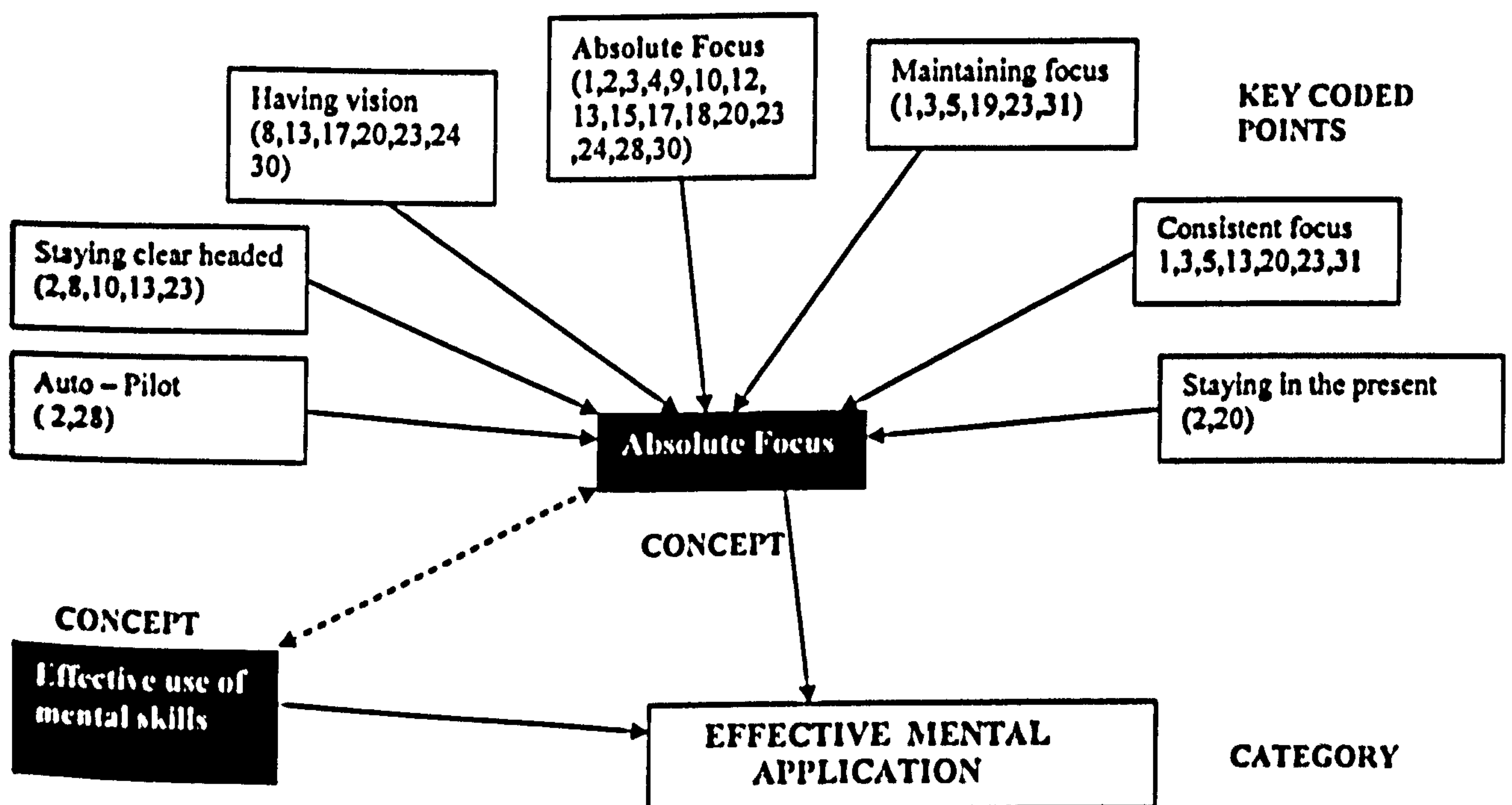


Figure 5.5 The emergence of Absolute Focus as a concept and its contribution to the Effective Mental Application category, (numbers in brackets are identified Elite Coach interviews) - the number in bold denoting female respondents

The preliminary analysis provides evidence that although absolute focus is a vital component of mental toughness it has a variety of dimensions associated with it. Findings demonstrate that it is not just important being focused, but it is just as important in maintaining focus and having consistency of focus.

When considering the detailed IP analysis and coding (Appendix B, Volume 1) it shows that without being focused and having the ability to deal with distractions are the most important mental skills that coaches relate to mental toughness.

The contribution of preliminary IPA within initial coding fully supported thematic emergence. The following examples shows how one coach interprets the term ‘mental focus’ to be more appropriate for what he perceives mental toughness to be:

Participant Direct Quotation / Source of Interview	IPA Analysis and concept transformation
<p><i>When you use the term mental toughness it has a little bit of a sort of masculine or aggressive type of connotations to it. I suppose we would tend to use a slightly different phrase with our swimmers. We would probably use mental focus. Perhaps as a coach, I have got in the back of my mind that term, rather than mental toughness. A concept of getting the swimmer into what is known as an ideal performance state. Now to me mental focus is a very key element of that.</i></p> <p>Elite coach 28- Swimming</p>	<p>The meaning attached to the term mental toughness is perceived by the participant as being somewhat gender biased but the researcher finds it difficult to understand such a perspective. It implies that females are not as capable of being tough performers as male counterparts within the swimming environment. However, the coach prefers to employ the term mental focus which is more neutral and directed at attention and concentration on task completion and does not allow the opportunity for gender connotations to be applied. Additionally it is linked with an ideal performance state in which paying focused attention is a vital component.</p> <p>absolute focus / maintaining focus</p>

Table 5.15 IPA coding and transformation of concept emergence within Elite Coach data

Detailed preliminary analysis also provides a selection of verbatim quotes in support for the conceptualisation of absolute focus as an emergent concept, which also substantially support the category formation of ‘effective mental application’ (see Table 5.16).

- *They have got to focus on what they are trying to do (EC 13)*
- *The guy with mental toughness keeps a clear head, is focused and is determined (EC 10)*
- *Being focused in basketball is a player who does what is expected of him, doesn't do anything silly, never goes over the top doesn't elaborate on plays or movements or passes or anything like that he just does what's required correctly in the set time frame (EC 1)*
- *Mental toughness you could say is about being able to stay focused on what you are going to do, how you are going to ride the test, despite the fact that the horse may be giving you some sort of feedback that it is tense or nervous. I think the mental toughness is the ability to remain concentrated (EC 31)*
- *By trying to stay absolutely focused on what I was going to do and how I was going to ride it and as I went through the tunnel into the main arena and the crowd were fantastically vocal (EC 2)*
- *The medallists will be those that are the toughest, focused and use their mental skills that require them to perform at that particular time (EC 30)*
- *I don't know about mental toughness, I just use term focus; I just focus myself. (EC 4)*
- *I think the tough people are those who actually keep themselves focused, take themselves away wherever they need to and know exactly what they have got to do during the day or during an event, and then get themselves ready for it and then do it well (EC 15)*
(Participant source in brackets)

Table 5.16 Examples of direct quotations supporting the emergence of the 'absolute focus concept

The data provides evidence that being focused is having full attention on task whilst excluding other distractions from concentration. It is about having a clear mind, free of unnecessary thoughts not related to the task completion. It is about performing in the 'here and now' and doing what is required.

'Dealing with distractions' is obviously related to being focused as they are symbiotic themes. Being totally focused means minimal distraction, whilst being unfocused means taking in irrelevant stimuli at the expense of more important task information. Such findings are consistent with Fourie and Potgieter (2001), Gould *et al.*(2002) and whose studies found that 'Concentration' and 'Focus' and 'Task Specific Attention' respectively emerged as an important concept which underpins mental toughness.

The 'dealing with external distractions' data within the 'effective use of mental skills concept' revealed the following selective quotations:

- *I think they have got to be able to knock the little things out of their mind that don't interfere with the performance (EC 15)*
- *Players who are not able to shut out problems that they can control and it will have impact on their ability to perform. I think they have not been able to consistently deal with those or recognise that those situations and therefore. they let it become a distraction (EC 12)*
- *Some people are overwhelmed by the size of the event. They go to the Olympics and they don't really achieve to their potential (EC 32)*
- *I think that is a lot tougher than actually getting out there and doing it, is preparing with all those other distractions and to actually get out there and do it (EC 3)*

Table 5.17 Examples of direct quotations supporting the emergence of the 'Dealing with Distractions' concept

Coaches are both explicit and implicit in how they explain the contribution that dealing with distractions makes to mental toughness. It seems that being focused is the main priority and this is enhanced through the ability to block out both internal (thoughts and feelings) and external (audience, noise, other competitors etc) irrelevant distractions. Effective mental application is inextricably related to the major category 'Dealing with Event Pressure' which emerged as one of the most substantive categories within the emergent theory, as it was supported by nine concepts making it one of the most heavily supported categories within the theoretical framework.

4. Dealing with Event Pressure

Figures 5.3 and 5.6 show how the category emerges from supporting concepts. The concept of handling pressure is central coaches' perceptions of mental toughness. It is a pivotal category related to dealing with stress and anxiety, dealing with mistakes, dealing with setbacks, gaining the mental edge and previous experience. Other concepts such as extending beyond the comfort zone and handling success also support the emergence of the major category. All the supporting concepts were heavily substantiated with the exception of handling success. The diversity of the results demonstrates that people have different perceptions of what being mentally tough means within the competitive arena. Handling pressure holds a wide variety of

possible meanings for participants and requires detailed analysis as opposed to more general treatment.

Connections may be linked to other emerging concepts such as self control and absolute focus as athletes are most likely to lose control when dealing with event pressure, particularly when experiencing mistakes and setbacks and results support this.

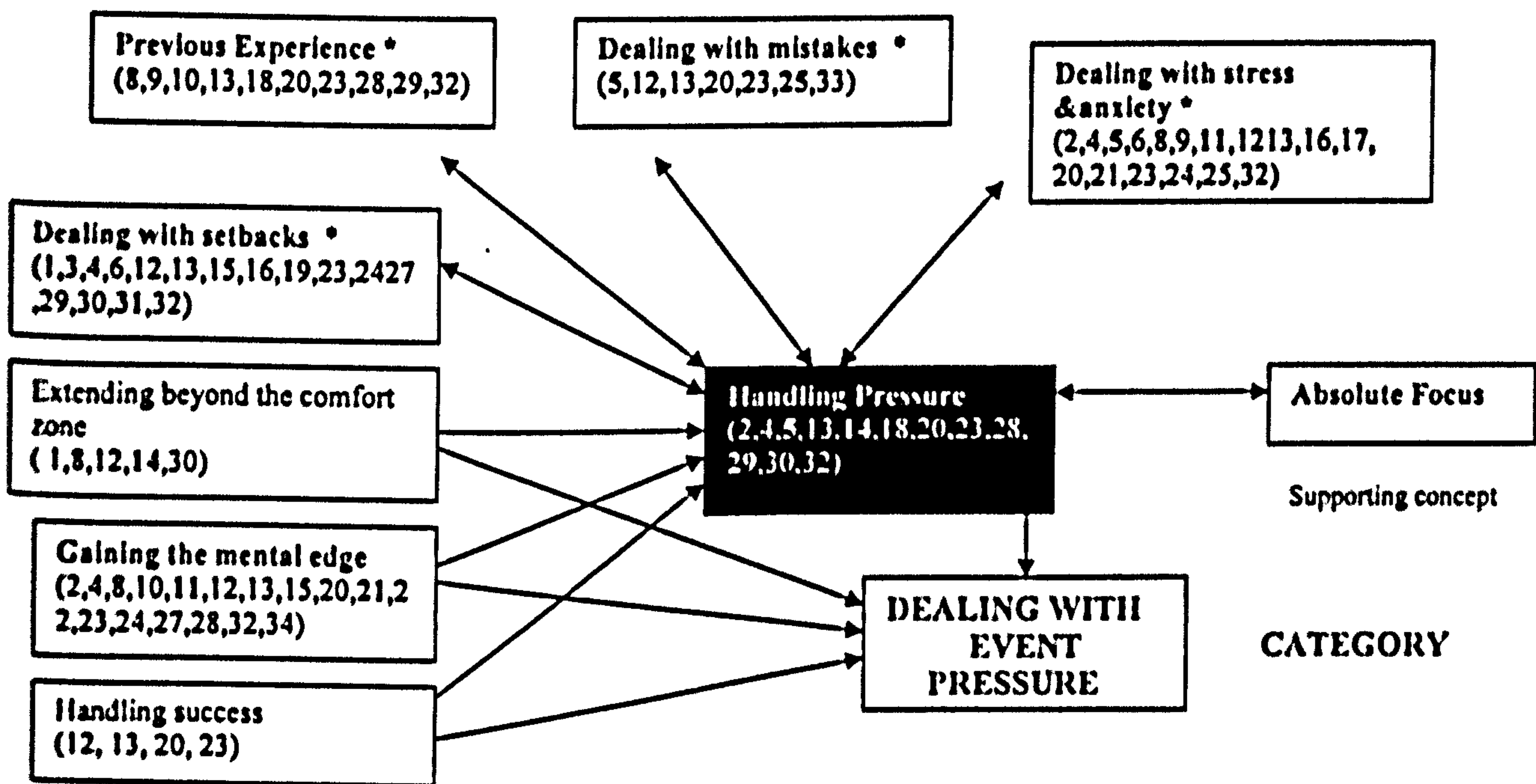


Figure 5. 6 The emergence of ‘Handling Pressure’ as a concept and its contribution to the ‘Dealing with Event Pressure’ category (numbers in brackets are identified Elite Coach Interviews with females in bold) *Substantiated supporting concepts also in bold

IPA provides a deeper understanding of how handling pressure is perceived and its connection to mental toughness. The most striking finding being that if a person can handle pressure very well, they will be perceived to have what is considered mental toughness. Table 5.18 provides a deeper understanding of such toughness perceptions

Participant Direct Quotation / Source of Interview	IPA Analysis (Meaningful Interpretation of content) and key code-concept transformation
<i>He has been around a long time now and he has had massive disappointments. I remember in Albertville in 1992 he lost the race off by a couple of a hundredths of a second to actually compete in the Games, didn't make that team, although he was there in the reserves. Then again, in Lillehammer in 1994, he finished 8th in the four man, and he did that with an inferior team, did very well there. He has been so close on so many occasions and then things have fallen apart because of stupid mistakes. The guy fell off his sled in the world championships the year before the Olympic Games; he was disqualified when going very well. So many different set backs he has had to deal with. Elite Coach 16- Bobsleigh.</i>	Setbacks can instil mental toughness in people despite repeated occurrences and the athlete was considered by the coach to be an extremely tough performer mentally. However, in an attempt to make sense of such perceptions if the performer was truly mentally tough, may be they would have not experienced so many errors or disappointments. It may be that the coach recognises the ability to bounce back from a setback as the most important characteristic of mental toughness and not the outcome of the performance, such a winning a medal. dealing with set-backs – Handling Pressure

Table 5.18 IPA of Elite Coach data in concept / category emergence of Handling Pressure

Recovering from a setback demands an element of mental toughness depending on the severity of the setback but it may be a different type of toughness than applying focussed attention to whilst performing a skill. It requires a sense of resilience and dogged determination to succeed and learn from ones previous errors or case of bad luck. It seems when exploring the meaning of the following two quotations that mentally tough athletes respond better and quicker than others, and they do not dwell on failures and deal with them and move on to the next task, almost immediately if required. Reflection time is minimal but effective enough to learn and take note of what is needed to improve. The quotations also include a sense of optimism and patience within mentally tough performers.

When they lose they are much more devastated but stronger, and that allows them to come back much quicker. They are stronger and they think after a set back, "Ok, I'll be strong and think OK, there's another day so what's next, let's set another goal ,there will be another day that will allow me to come through. Elite Coach19- Boccia (dealing with set-backs)

In the Commonwealth Games in 1998, he had a devastating experience on the 100 butterfly, being disqualified at the start, yet he had another event within 20 minutes or half an hour afterwards, so he had to raise his performance and get mentally tougher. He did it and won a medal. Elite Coach 28- Swimming (dealing with set-backs)

However, deeper analysis shows that some athletes, depending on the severity of the set back and disappointment may take a while longer. A hockey coach explains when describing a player who she perceives as mentally tough:

She has now bounced back from a big disappointment and she has kept going until she is now well established England and GB player, who probably you would now put into a world side. So, I think for me she would describe an athlete who has that mental toughness / mental strength to bounce back. Elite Coach 29- Field Hockey(dealing with set-backs)

IPA analysis indicates that it may be wise to wait and evaluate the responses to setbacks before assessing whether people are mentally tough or not. Mental toughness may well prevent a set back in the first place but as every athlete experiences setbacks it may well be a useful indicator to assess the quality of the response as a useful indicator of how mentally tough people are.

Dealing with both mistakes and setbacks were concepts that emerged very early within the data coding and analysis and later heavily substantiated. Typical examples from findings which demonstrate how IPA interpretation was applied include:

Participant Direct Quotation / Source of Interview	IPA Analysis (Meaningful Interpretation of content) and key code-Concept transformation
<i>Where either you are injured due to a crash and have to get back up and ride against the person who maybe just knocked you off, or having been one up in a competition thinking the win was easily yours but then being beaten by a move by the other competitor and then to come back from that. I think that really shows what I would term as mental toughness within our discipline.</i> Elite Coach 24-Cycling	Having the ability to cope with a poor performance and continue with renewed determination and will to succeed, despite a major disappointment fresh in the mind dealing with mistakes /set-backs / Handling Pressure
<i>Mentally it was a very tough game because he was making mistakes but he still came through the whole thing. So in that respect he never lost track of it. Often people can make mistakes and then lose track of the whole game. He never, he would get back onto it and that is one of the hardest things to do.</i> Elite Coach 13- Badminton	Despite going through a bad performance period the athlete continued despite adversity and stayed with it. Having a resilient attitude to continue through thick and thin and having the patience to endure the poor phase of performance. Having the doggedness to see it through when feeling the pressure. dealing with mistakes – Handling Pressure

Table 5.19 Preliminary IPA of Elite Coach data for Dealing with Event Pressure category

Findings demonstrate that dealing with a setback is perceived to be more serious and difficult to cope with than dealing with a mistake which may well be immediately redeemable during a performance, but if dealt with effectively could well increase mental toughness within performers. Typical examples which emerged include:

I think that mentally tough people turn setbacks on their head and say – well whatever the reason was, they try to figure it out, deal with it and then go forward. (EC 1)

I don't think it does any athlete any harm. If they are tough enough to come back they will do it. That's what makes them tough. (EC4)

An aspect of mental toughness is the durability, stick ability to come back from a setback I think it is a very critical one because people will always lose form in every sport, you will never find anybody who hasn't at some stage. (EC 20)

I think everybody accepts that there probably are going to be set backs, I don't think anybody can be, it would be a very naïve approach to say 'oh I am going to get there and I am never going to have any set backs on the way'. The ability to deal with the set backs when they come along and recover from them quickly is probably a sign of mental toughness. (EC 12)

In sprint cycling it is the rider who crashes and then with quite severe injuries still manages to get back up and ride to the end of the competition. When you crash at 40 mph on wood or concrete, there is a serious amount of soft tissue and often major damage done to the body. To have the ability not to just say that is it, I am out of this, but to put on a new set of clothing, get their bike straightened up, get back on their bike and ride I think shows a great amount of mental toughness. (EC 24)

The above examples show that setbacks differ in the context in which they happen such as injury and loss of form. The main point being, it is how the athlete responds to a setback which demonstrates if they are mentally tough, as it is inevitable that they will happen. Nearly 60% of coaches contributed to the 'dealing with setback' concept which is very substantive.

The findings support early work of Kubistat (1986), who considered lessons learned from negative experiences were related to mental toughness. In the past 5 years, Jones *et al.* (2002) and Middleton *et al.* (2004) both highlight the concept as an important mental toughness factor. Most recently Middleton *et al.* (2004) has likened the factor to the issue of perseverance of a task when faced with adversity.

On a conceptual level 'dealing with stress and anxiety' emerged as a substantive concept; its key point supporting codes outlined in Figure 5.7.

The ability to cope with intense pressure and anxiety is considered an integral part of all competitive sport, particularly at the highest levels (Gould *et al.*, 1992a and b, 1993a, 1993b; Gould *et al.*, 2002; Cooke, 1995; Calleja, 1997).

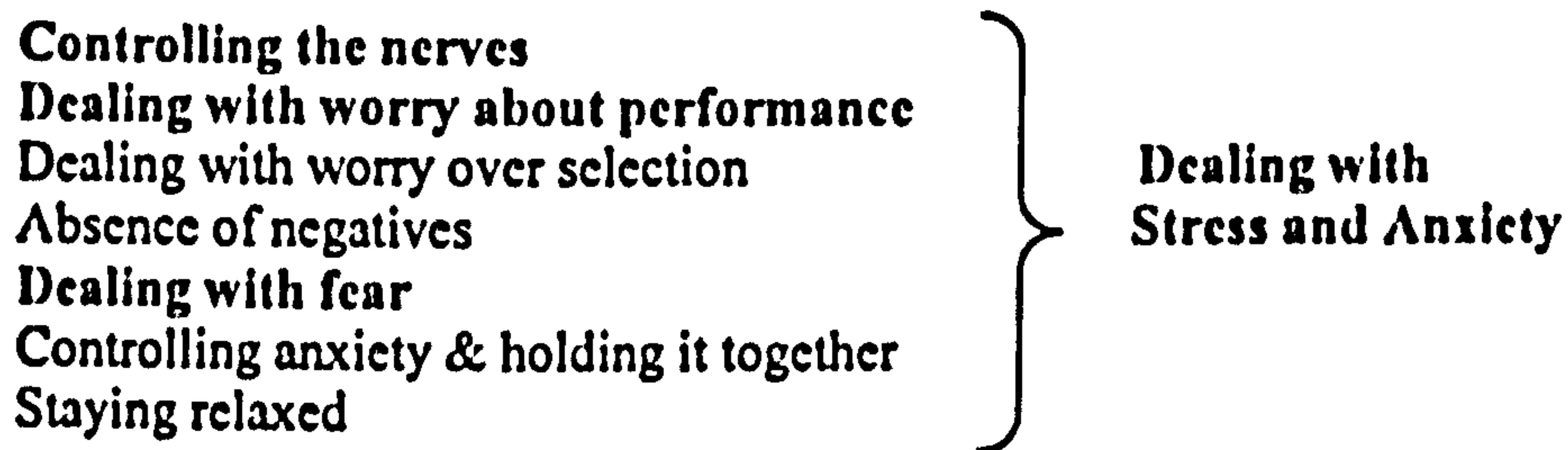


Figure 5.7 Supporting key codes for the concept 'Dealing with stress and anxiety'. Substantive key codes in bold

The most substantive supporting key codes are largely associated with cognitive anxiety, such as 'controlling the nerves', 'dealing with worry' and 'dealing with fear'.

Coaches perceive the ability to deal with stress and anxiety as strongly related to 'handling pressure', itself a feeder concept to the emergent category 'dealing with event pressure'.

Direct quotations, which support the emergent conceptualisation include:

Mental toughness comes in there in terms of the discipline of controlling one's competition nerves before going into a big competition arena such as the Olympics.

Elite Coach 2 – Equestrian (controlling the nerves)

To be a top-level performer I would also say because in a pressure situation mentally you need to hold yourself together.

Elite Coach 17 – Swimming (controlling the nerves)

The fear, the worry about performing and that is why I feel that all the time we have got to keep reinforcing the 'c' word, confidence. We go back, to having confidence and self-belief.

Elite Coach 23 – Swimming (dealing with worry about performance)

You get the pressure of worrying about losing and the thoughts of winning it, and then you come to serve. The secret is when the pressure is really on, and you can still think and move, I think that is important. He knows how to win when he gets to the right stage, maybe because he is still relaxed enough, at the same time concentrating to be able to keep thinking about the game.

Elite Coach 13-Badminton (dealing with worry about performance)

Many participants identified controlling the nerves (EC2,4,5,13,16,17,20,21,23), worry about performance (EC2,8,11,13,16,17,23) and dealing with fear (EC 9,11,23,24,25,32) as major contributing issues linked to dealing with stress and anxiety. Effectively handling the stress and dealing with the symptom effectively was what coaches identified as mental toughness. Interpretative analysis links these as both cognitive and somatic aspects of performance, indicating mental toughness requires multi modal skills in self regulation.

Handling pressure was perceived to be a substantive concept as it was also linked to having previous experience in competitive situations:

She has had that experience worldwide, she has travelled, she has swum against the best, and she knows what has to be done. Elite Coach 23- Swimming (previous experience)

You might have to drag people half way around the world to toughen them up and give them lots of different experiences, to go through some failures. Elite Coach 4- Swimming (previous experience)

If you got to somewhere like the Olympics and then you take them away from such a high level of competition, to a lower one they are usually tougher because they are used to the increased levels of stress and competition. I would say they come out tougher because of the Olympics. If they haven't been to an Olympics they are nowhere near as tough. Elite Coach 32 – Cycling (previous experience)

It will take at least the second Olympics before someone will perform because they need one Olympics to deal with it and understand what it is. Elite Coach 23- Swimming (previous experience)

IPA indicates that such previous experiences may well provide an opportunity for athletes to develop their abilities to deal with adverse environments and potential setbacks and act as a form of learning experience for the future, which will result in tougher individuals.

'Gaining the mental edge' and 'extending oneself beyond the comfort zone' had many related codes linked to the thematic concept without having conceptual density throughout numerous codes in support of the concept. Only 'winning mentality' as a

key code within 'gaining the mental edge' emerged in numerous interviews. It was connected to training and building confidence:

We are trying to build the winning mentality as they go along; training sessions and building confidence do it. If you get someone who achieves top 10 in the last 5 world championships they go they're expecting the minimum and their expectation is always that much higher. They're looking for medals all the time. Elite Coach 32 – Cycling (winning mentality)

Gaining the mental edge encompassed many thematic statements such as:

Having a professional attitude (8,10,15)	Rising to the occasion (28)
Having maturity (15)	Big occasion toughness (23)
Living close to the edge (2)	Not giving anything away (12)
Looking after oneself (2)	Being single minded (12,13)
Winning mentality (8,12,13,23,24,32,33)	Doing the job (15)
Not making excuses (22)	Being ruthless (4,12,27)
Courage and conviction (2,3)	Killer instinct (10)
Being consistent (13,20,28)	Hates losing (21)
Showing conceit for the opposition (11)	Loving the competition (20)
Elite coach source in brackets	

It was a conceptual label for a diverse collection of statements with a shared meaning similar to the concept 'extending oneself beyond the comfort zone'. This concept included reference to work required by athletes far beyond what is considered normal within Olympic preparation. Such evidence demonstrates that there is a diversity of interpretations employed by people to explain an aspect of mental toughness. Gaining the mental edge has a wide variety of possible interpretations that are used by participants to explain it and phenomenological inquiry located such differences. To be a champion arguably warrants the need for an athlete to be doing something different than fellow competitors, which extends them beyond their normal comfort zone. Such practice may well influence those athletes who win medals and those who do not in major championships. Direct examples include:

I think that's part of it, because I think there are people in life that look to do difficult things and look to constantly challenge themselves or to raise the bar, but there are others who like to function within their comfort zone. They are the ones that you seem to have to drive as a coach and the ones that you tend to push. My preference is for the first group. Elite Coach 14 -Field Hockey (raising the bar)

Mental toughness is extending oneself beyond what you may think is required. Elite Coach 10- Windsurfing (extending oneself)

Overall, the category was perceived to be extremely substantive in what coaches considered mental toughness to consist of within the context of elite sport. The findings show that being able to deal with the diverse array of factors which event pressure demands is what makes being mentally tough so difficult, as people require a multiplicity of psychological skills. Merely being effective in one or two may not truly demonstrate what total mental toughness demands. These findings have demonstrated that mental toughness when 'dealing with event pressure' is more complex than previously reported within elite environments (Middleton *et al.*, 2004; Bull *et al.*, 2005) whose provision of general dimensions of a concept sometimes obscure important detail of a more complex issues.

Extending one-self, pushing the boundaries and leaving the comfort zone is also part of the training experience and this together with wider situational demands emerged as the fifth of six major categories.

5. Training and Situational Demands

The advantages of employing phenomenological method are demonstrated when unique and previously unexplored themes emerge which add to an increased understanding of the concept. The findings show that mental toughness is related to wider issues outside of the direct performance arena. The category emerged from concepts such as training situations and issues of lifestyle management. Coaches linked mental toughness to smart training (EC1, 4, 13, 14, 20), tough training (EC4, 10, 15, 16, 19, 23, 24, 30), the competitive training environment (EC4, 8, 17, 20, 27, 32), training culture (EC1, 4, 19) and training with the very best (EC8, 17, 23). Additionally it also linked it to the ability to deal with lifestyle demands (EC1, 6, 10, 23, 32) and the ability to adapt to the environment (EC9, 10, 20, 32). The following quotations support selective key codes within the conceptualisation:

Nobody I know, ever trains badly with you and does well in competition. I have never ever seen that happen. It is just not the case. People don't just come good, not in the sports I have been involved with. Elite Coach 20-Canoe Slalom (training methods)

Yes you have got to expose yourself; there is no point in just swimming in a Wigan pool and training there, no point at all. Elite Coach 17 –Swimming (training with the best)

You have to be mentally tough to compete within the training programme as it is extremely demanding and filters out the weaker athletes. Elite Coach 4 –Swimming (competitive training environment)

Dealing with the all the travelling and the circuit lifestyle is extremely difficult. Playing is what they enjoy, all the time spent getting there and getting back is what is really tough. Elite Coach 32 – Cycling (lifestyle demands)

Well four years ago there was no national lottery and now all of a sudden taking part-time people and making them into full time bike riders is a real challenge. On the road from anything from five to nine months, living out of a suitcase, leaving their partners, family, kids; it becomes a whole lifestyle change, becoming mentally tougher to deal with that. Elite Coach 32-Cycling (adaptation to the environment)

Wider situational aspects of mental toughness demand more research attention as it is clear that it is part of what mental toughness is perceived to be about. Such aspects of the concept have been largely ignored and only Jones *et al.* (2002) has emphasised other dimensions may exist. Mental toughness in the future is quite likely to be considered more of a multi-dimensional concept which needs to be applied across diverse contexts and situations, not only from within the competitive sporting arena.

6. Physical Coping Ability

This category emerged from the necessity to be extremely physically fit and also having the coping ability to deal with the excessive physical demands of top-level competition. Given disciplines such as rowing, cycling, swimming and badminton, canoe slalom and field hockey (as represented in this sample) demand high levels of physical energy compared to others so results need to be accepted with caution.

However, when considering such disciplines, themes such as dealing with fatigue(EC8,10,13), exhaustion (EC8,10), coping with pain (EC12,16,23,27) and general discomfort (EC8,10,23,24) emerged providing a connection between physical and mental toughness. Direct examples from the findings support such connections:

And you would say that was mental and physical toughness being able to bare that pain, not just once but to do it repeatedly in the search of scoring the goal. Elite Coach 12- Hockey (coping with pain)

She is working with a personal trainer very hard outside, off the water to push her threshold up so she can handle the pain better when she competes. Elite Coach 23- Swimming (coping with pain)

Its all about dealing with the intense fatigue when in a real blow on the water, that's what mental toughness is, making sure you stick in when its ripping your body apart. Elite Coach 10 – Sailing (coping with discomfort)

Most athletes are close to exhaustion at the end of a regatta and dealing with the sheer exhaustion is what makes a winner. Having the toughness to perform when really exhausted and still deliver. Not many have that quality. Elite Coach 8- Sailing (coping with discomfort)

Several coaches offered meaningful statements linking specific fitness with confidence:

If you can get to a stage where you know you are four seconds faster than anybody else, then that just gives you the confidence anyway to win the race. Over the sprints it is a little bit different, a straight 50 metres takes a lot more power than say fitness in that, a lot depends on the style and the finish. But in endurance races, you are really getting to stamina, and I think they need to be extremely physically fit. Elite Coach 4- Swimming (physical fitness/ confidence)

He would come to me and say 'I am so fit at the moment, I can't wait to get on that court', he was like a train. In his own words, he said afterwards 'I can't believe I feel so physically good'. I saw them play a game in Switzerland just after that, it was an awesome game, and he was as mentally strong as I ever saw him. It was one of the toughest games I have seen him play. That was the year they won the All England championship. Elite Coach 13-Badminton (supreme fitness /physical fitness/ confidence)

If they get fit then the confidence comes, which actually gives them mental toughness, because the confidence is there and I think confidence and mental toughness are really just confidence. Elite Coach 21- Swimming (self confidence/ physical fitness)

Previous research has under valued the necessity to consider the mental – physical link to mental toughness, particularly in highly explosive and prolonged endurance disciplines which require the tolerance of high pain thresholds. Findings suggest it should be an area for further research exploration, particularly from a phenomenological perspective to explore differences in the need for physical coping abilities in relation to the task demands of the sport.

Overall, the Elite Coach findings on mental toughness perceptions derived from their 'lived experience' provides a diverse assortment of key codes, concepts and categories which presents a theoretically different model of mental toughness to challenge existing research. It provides a thoroughly detailed and well grounded conceptualisation more so than any existing work. The initial grounding of which was provided through interpretative phenomenological analysis which extracted a deeper and more meaningful understanding and explanation of the concept than currently available. The conceptualisation was developed through emergent grounded theory procedures. The findings partially support existing research at a super-ordinate level with several major categories supporting existing work, but at a deeper level of analysis the results show an extremely diverse assortment of conceptual and key code perceptions exist which supports such a theoretical framework. This provides a major scientific contribution to existing work in developing an understanding of the conceptualisation of mental toughness from within an elite coaching perspective.

5.6 Conceptualisation and categorisation of mental toughness within the Elite Athlete sample

The search for emergent higher order themes from integration of related concepts generated the following major categories:

- 1. Commitment and Determination**
- 2. Effective Mental Application**
- 3. Dealing with Event Pressure**
- 4. Self Confidence and Belief**
- 5. Self Control and Discipline**
- 6. Training and Situational toughness**
- 7. Physical Coping Ability**

The complete index of how emergent key codes support the above categories is located in Appendix C, Volume 1. The conceptual/category emergent data is diagrammatically shown in Figure 5.8.

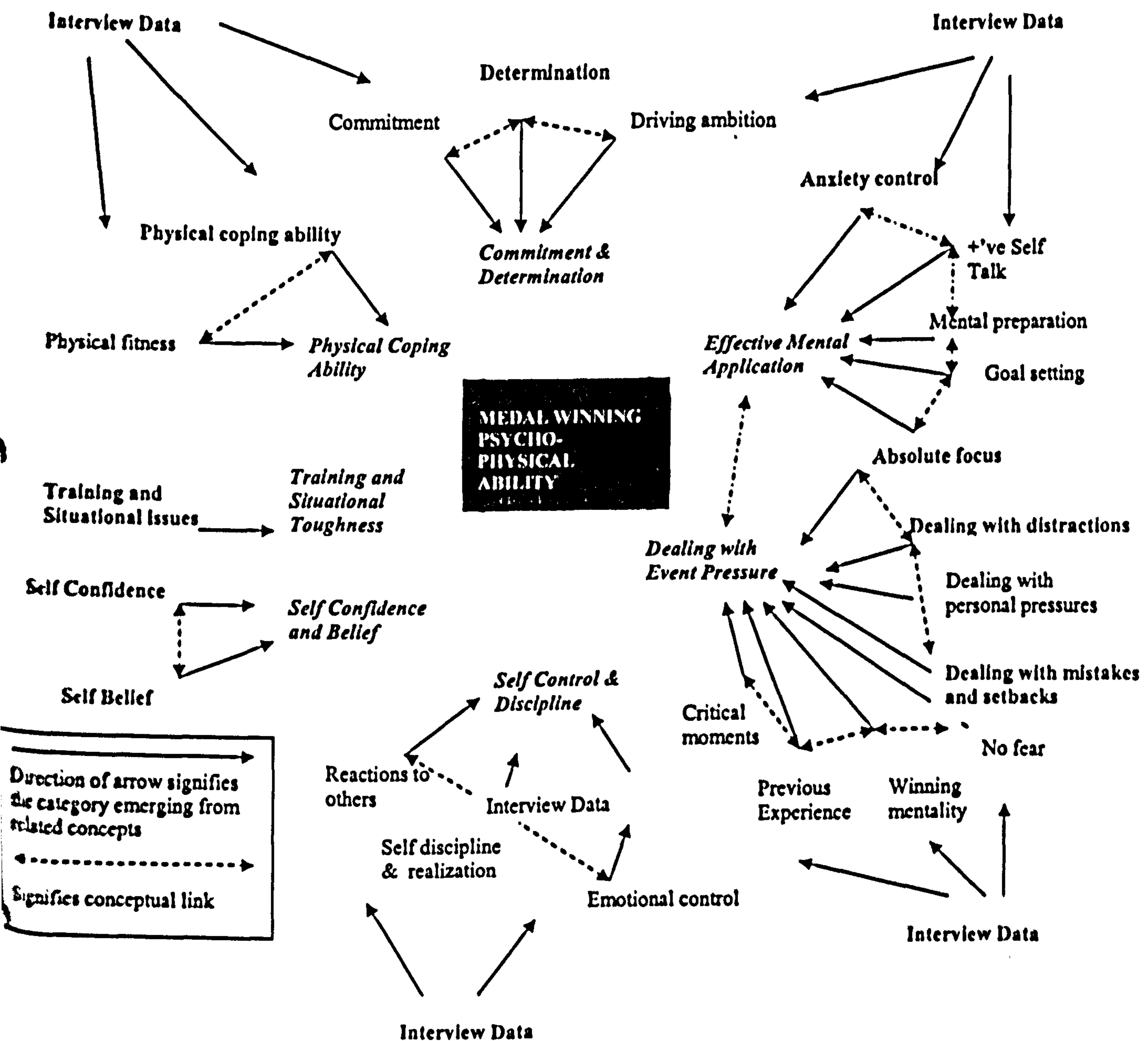


Figure 5.8 Emergent categories derived from Grounded Theory analysis of the Elite Athlete Sample (n=37) Substantive emergent concepts in bold

1. Commitment and Determination

This category emerged from a substantive concept 'determination' together with 'commitment' and 'driving ambition'. The concept of 'determination' emerged from seven related key codes of which determination was the most substantive, being

formed from 12 interviews (see Appendix C, Volume 1). Other related codes included making sure you get what you want, channelling your desire, inner strength/ inner fight and reaching your intensity level although these received less meaningful emphasis.

In describing the contribution of determination to mental toughness athletes related it to a high need to achieve, a refusal to accept failure and having self belief. It may well be that mentally tough athletes are those who have intense determination but also have additional coping qualities which support such determination. It is unlikely that mental toughness is achieved by athletes having only limited characteristics within their mental toughness profiles. Direct examples include:

I just think it is about determination. It is the one word you can use to describe mental toughness. It is pure determination. Elite Athlete 26- Badminton (determined)

I've never used the term mental toughness in my past experience. I just say things like I'm very determined. I'm very determined in what I do and I don't like to give up at what I do. Elite Athlete 11 – Cycling / Paralympics Gold medal winner (determined)

Psychological qualities of commitment, being single minded, the driving ambition to succeed, determination, self belief and the ability to deal with adversity are all perceived to be part of being mentally tough to the following elite cyclist:

I think it would be about the drive or the ambition to succeed. The self-belief and the expectation of what you can do. It is important that you give it you're all and it's a bit like single mindedness. You approach things with a purpose and you say to yourself, this is what I'm going to do no matter what's thrown at me I'm going to be able to do it. Elite Athlete 18 – Cyclist (driving ambition / self belief / single minded)

Mental toughness means many different things to this athlete but it is the theme of determination that receives most substantive support, as it seems to provide the key to continuing when faced with adversity. This is supported by a triple Olympic equestrian athlete offering her interpretation of mental toughness:

I am very dedicated and determined and competitive, therefore I tend to be mentally tough and I keep doing it. Those that aren't get knocked down early on. The tough riders get

through but others realize it's not for them and fall away. Elite Athlete 21- Equestrian (determined / being totally dedicated).

Athletes use determination and commitment interchangeably, but the common thread is that people apply themselves totally to achieving their objective over a period of time, if committed. Determination tends to be more of an immediate action and it is self-driven, hence the term 'self-determination'. The results demonstrate that intense self driven characteristics are central to how athletes perceive mental toughness. Such thoughts are reflected in the following quotations:

You either want to do it, to the best of your ability or you don't. I think it's commitment and decisiveness. Do you want to do it or not? Elite Athlete 23 –Canoe Slalom (determined / total commitment)

The difference was that I chased it, absolutely. I didn't mess about that was the whole point. I was 16 and went to a junior world champs and realised after that I did actually want to do well at this. I thought I did before, but I really didn't realise.
Elite Athlete 23 –Canoe Slalom (being totally committed)

The athlete recognised at an early age that he was going to commit himself totally to the goal of achieving Olympic Gold following a period of uncertainty and confusion.

This findings have similarity to the category which emerged in the Jones *et al.* (2002) study 'having the insatiable desire and internalised motives to succeed', the Middleton *et al.* (2004) category 'goal commitment' and Bull *et al.* (2005) who identified 'dedication and commitment' as important aspects of mental toughness in elite English cricketers.

2. Effective Mental Application

This category is closely related to 'dealing with event pressure' as it is concerned with the application of mental skills specifically within the competitive environment.

Concept	Codes (Key point)	Participant (Interview source)
Anxiety Control	Dealing with anxiety	2,3,6,7,8, 25,26,27,28,30,31
	Controlling the nerves	2,3,6,7,8, 16,25,26,28,30,33,35
	Dealing with worry	2,6,7,10,35
	Worrying about others	30
	Avoiding negative thoughts	3,6,8,10,19,20,26,29,30,31,33
	Avoiding complacency	35
	Re-interpreting anxiety	10,
	Feeling overawed	10,28,30
	Staying relaxed	23
	Not thinking too much	23,26,27
Absolute Focus	Being Focused	1,2,7,12,14,30,33,35
	Ability to focus	2,3,4,5,8,10,13,14,15,16,17,19,21,29,30,34,35
	Mental parking	8,12
	Unconscious quality	6,10,19,28,29
	Staying in the present	35
	In the zone	30
	Not thinking too much	1,26
	Mental intensity	12,29,34

Table 5.20 Supporting key codes for the concepts of 'Anxiety Control and 'Absolute Focus' with identified interview sources within the Elite Athlete sample- Females in bold on far right column.

This category emerged from two major concepts; anxiety control and absolute focus.

Both substantive concepts were formed from multiple interview transcripts and contained both male and female contributions (see Table 5.20).

The two major concepts emerged from a variety of related key codes. The most substantive themes were 'dealing with anxiety', 'controlling the nerves' and 'avoiding negative thoughts' within the anxiety control concept, and 'being focused / having the ability to focus' within the absolute focus concept.

The following quotations support the above 'absolute focus' concept:

I don't know about mental toughness, I just use the term focus. I focus myself; lie in bed at night thinking about things. I mean obviously I expect to go through the heats and make the final so I don't really think about the heats too much, but just think about everything about the final... I think you need to be very focused on what you are doing. Elite Athlete 35- Swimming. (being focused)

If you can stand on the blocks and you know that you've put the effort in then you should be able to concentrate on your swim and forget about the media and just get on with your race, and not be put off with all the rest, then I suppose that's Mental Toughness. Elite Athlete 14 – Swimming (being focused)

In the Commonwealth Games and as part of the England team I was just focussed on my race. I was aware of the surroundings and the situation and that helped me build up my Mental

Toughness. The closer and closer I got to my swim the more and more aware I became of my race and you pick specific things out of the race to work on and that helps you mentally. Elite Athlete 14 – Swimming (being focused)

The examples attach meaning to the perceived importance of the event with focus becoming more intense as the competition advances. The concern with possible distractions and the need to focus on the day of competition is also important. Having the 'ability to focus' was identified as the most important aspect of mental application related to mental toughness by nearly 50% (17/37) of the sample. Such findings fully support previous work that has identified the mental factor as a prerequisite for mental toughness. It seems maintaining self focus (Bull *et al.*, 2005) and having 'task specific attention' (Jones *et al.*, 2002, Middleton *et al.*, 2004) are recognised as extremely important aspects of mental toughness. The supporting conceptualisation for the emergent category is shown in Figure 5.9 below.

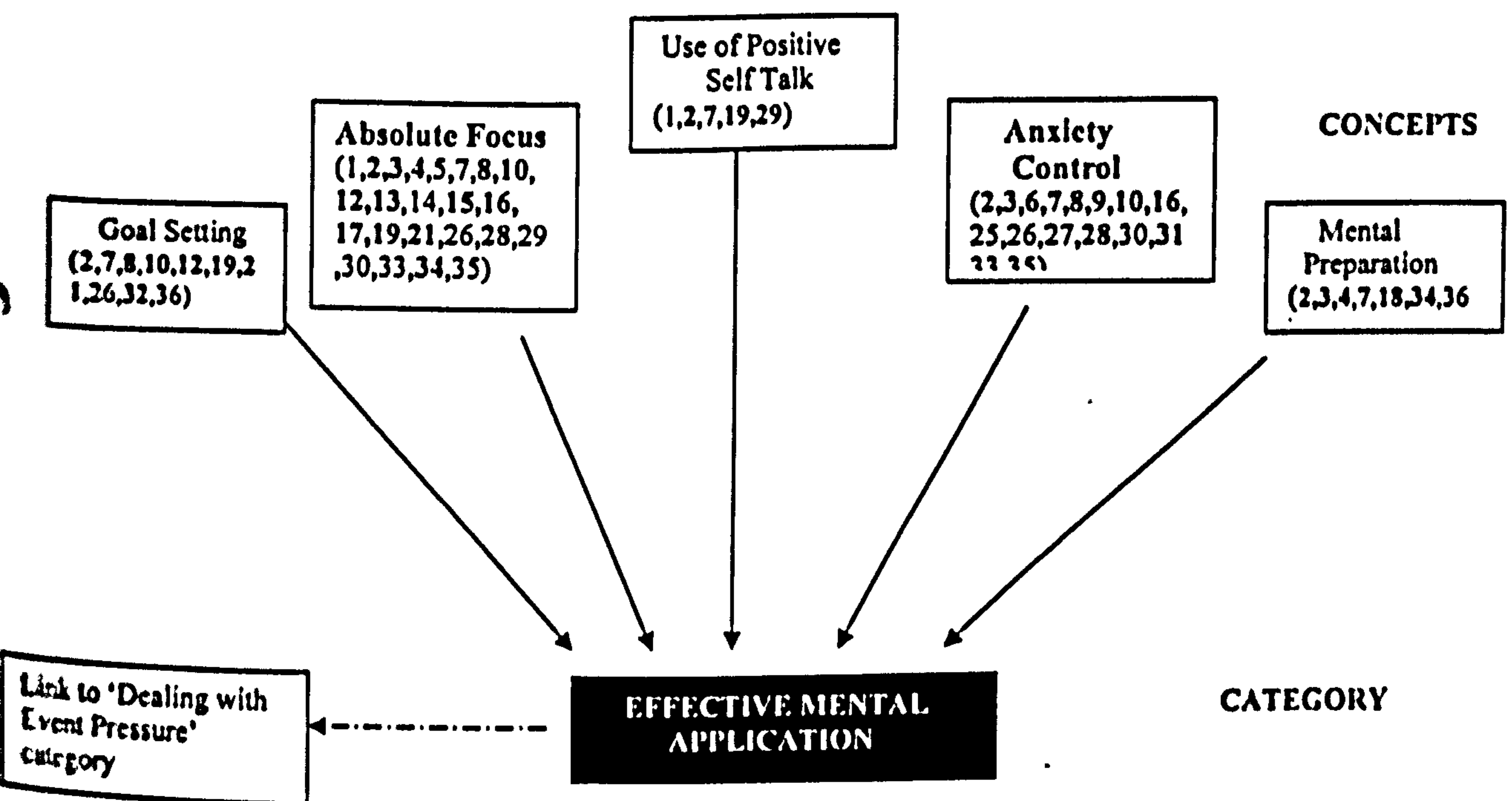


Figure 5. 9 The emergence of Effective Mental Application as a category within the Elite Athlete Sample (n = 37) Females in bold

The second substantive category to emerge within effective mental application was anxiety control and meaningful perceptions related to mental toughness included being able to 'control the nerves', 'dealing with anxiety' and 'avoiding negative thoughts'.

Cognitive anxiety comes in many forms and nervousness is not always a negative aspect of performance if athletes can deal with it. IPA provides evidence that athletes find it to be an essential part of performance. A swimmer who missed out on an Olympic medal in 2000 by 6/100ths of a second offers:

For me, people deal with nerves in different ways, for me the ready room is a necessity for me because it can make me nervous. I think the mental toughness part of it is being able to deal with the nerves and being able to channel them in a positive way. If you're not nervous I don't think you're going to swim up to your potential. Nerves are a necessity in helping you swim to your best. Elite Athlete 25-Swimming (controlling the nerves)

Being able to cope with nerves prior to and during a performance was identified by many athletes. A multiple medal winner from 1993 – 1996 comments:

The All England final when we were favourites... we must have been 9-1 down in the first game, then got it together and won quite comfortably. Once I got going it was ok, that were just nerves really, just getting over the nerves. Elite Athlete 26 – Badminton (controlling the nerves)

The example seems to convey meaning that nerves dissipate once the event begins but questions must be asked about the self regulation skills of the athlete in not being able to control their nerves in the initial phase of the match and lacking an element of mental toughness.

The ability to block out external distractions and focus on the performance in crucial moments is what wins people medals at major championships. An international badminton player who later became an elite coach reinforces this:

A lot of the time you haven't just got to play against your opponent, there is the atmosphere, the crowds, stuff like that. You could play against an opponent against a very partisan crowd you are not going to let things like that upset you. You have just got to try and blank them out when they call you all sorts of names. Elite Coach 26 – Badminton (avoiding negative thoughts)

The previous selective examples consider the use of mental skills within a competitive environment and overall findings provide numerous connections between the concepts within 'effective mental application' and 'dealing with event pressure'.

3. Dealing with Event Pressure

Dealing with event pressure emerged as a major category because many participants connected the ability to effectively deal with pressure situations as a central aspect of what constitutes mental toughness in top-level sport. The conceptual framework that supports the category includes many factors that are required when facing a pressure situation.

Figure 5.10 shows the conceptual make up of the category and its supporting codes. For reference to the source of interview data please see Appendix C, Volume 1. It demonstrates the category emerges from eight major concepts which are supported by a diverse assortment of 32 key codes. The concepts which were substantively supported were 'dealing with distractions', 'dealing with mistakes and set backs', absolute focus and having a 'winning mentality'. From a phenomenological perspective it is clear that people attach different meanings to what they perceive as mental toughness related to 'dealing with event pressure'. Merely accepting that dealing with event pressure is an important mental toughness category is not specific enough on a personal level. What is required is an idiographic profile of each person's interpretation of mental toughness in order to be able to fully understand their *own* perspective. When that is achieved it is possible to relate and discuss such perceptions and possibly work with the athlete in developing their mental toughness from their own frame of reference.

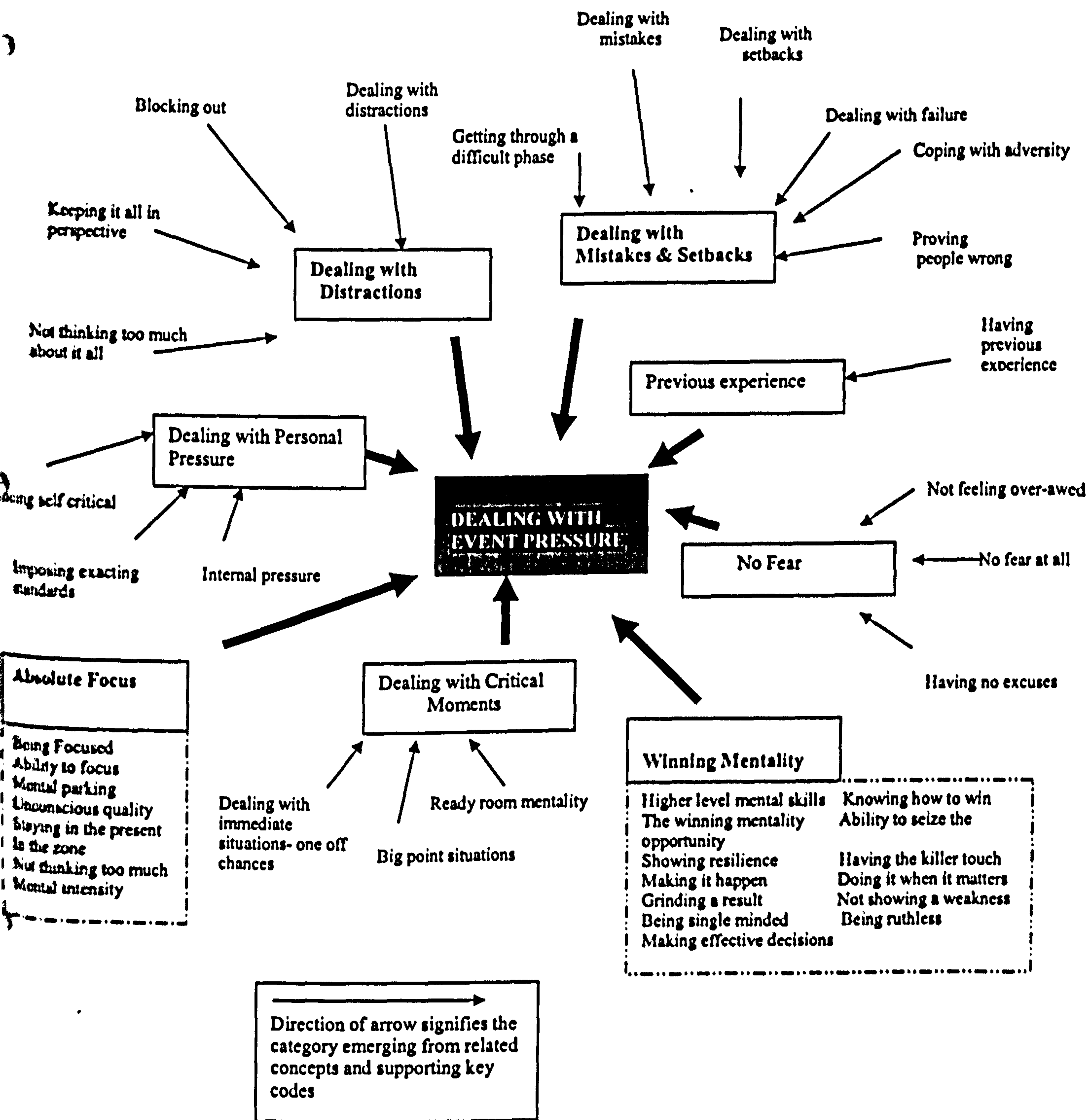


Figure 5.10 The emergence of 'Dealing with Event Pressure' as a category, its 8 supporting concepts and key coded points within the Elite Athlete sample – substantive concepts in bold

The following examples in Table 5.21 illustrate athlete perceptions of mental toughness within selective concepts with supporting interpretative transformation.

Interview data (Direct Transcription)	IPA (Transformation) –Supporting code / Concept
<i>Basically, it is an ability to concentrate and not let outside factors affect you. I think that is one of the key issues. If you cannot let outside factors to affect your performance and interfere when things are going wrong, that is such a massive part of being mentally tough on court. Elite Athlete 26- Badminton.</i>	A combination of focusing and blocking out external factors (distractions) , particularly when in difficult situations (errors, mistakes, decisions etc) Blocking out / Dealing with distractions
<i>When you realise you have got a very important game, you can just switch on and you can put other things aside and concentrate on the game, not let outside interferences affect you. Elite Athlete 20- Badminton.</i>	The implication that the importance of the event is a factor when dealing with even pressure. When extremely important, switching on at the right time is crucial and ignoring outside distractions may be vital for success. Blocking out / Dealing with distractions
<i>But when it is the Olympic Games and you have got to deal with the distractions. You know it is the Olympic Games and you know that there are cameras and spectators around. You know we never really had spectators unless it was like the Olympic Games and then it just appears to be a different ball game. Elite Athlete 7 – Pentathlon</i>	The athlete attaches meaning to the fact that major events draw media attention, bigger crowds and greater distraction potential. The magnitude of the event attracts greater potential for distraction to happen and mental skills need to be more intense. Dealing with distractions/ Dealing with distractions
<i>I was in the world championships in Taiwan, the other week and my mum rang me before my match, my dad was taken into hospital in Spain seriously ill with a stroke. So he was in a real bad way and I couldn't handle it. When I went out to play I thought I would be all right for a frame, and then it goes again. I ended up losing ten - eleven. I just wanted to get out of there after that. It is like something else, my toughness in that situation just went down the pan. Elite Athlete 8- Snooker dealing with distractions / emotional control)</i>	Having the ability to apply absolute focus when performing, should result in minimising outside interferences, but when personal issues need to be addressed it becomes more difficult to deal with. Distractions become difficult when emotions need to be dealt with. Dealing with distractions / Emotional control
<i>I mean that was a part of my life and you can't just block that out. But other things, crowd noise whatever, you can block that out quite easily. Elite Athlete 6-Badminton</i>	The athlete comments on the part that her children have on her whilst competing abroad and missing them. Personal issues are very difficult to block out. Blocking out / Dealing with distractions

Table 5.21 Selective Findings related to 'Dealing with Distractions' within the Elite Athlete sample

The personal meaning attached to a potential distraction is the most important factor and it takes an incredible mental resilience to withstand letting such personal issues

invade into ones mindset. By taking a phenomenological approach such meaningful examples become apparent and place a sense of perspective on the need to block out potential distractions. Basically, distractions need to be understood for what they are and the potential impact on the person experiencing them.

An Olympic swimmer explains that distractions invade from two directions and from a variety of sources:

Mental Toughness should be broken down into two elements Internal and External. You need to slay the demons within yourself and say 'yes I can do this, I can do this'. Also, the external factors such as coping with media pressures, and other pressures that come with being one of the best sports people in the world. Also, dealing with all the other guys around you, that is very important. Elite Athlete 25- Swimmer (dealing with distractions).

The interpretation of the data suggests that absolute focus and dealing with distractions are both highly perceived aspects of mental toughness and the findings are compatible with both Jones *et al.* (2002) and Middleton *et al.* (2004) who also identified the concepts as major contributory factors.

Dealing with mistakes and set backs contributed greatly to the formation of the category with many athletes recognising the need to effectively deal with such threatening aspects of performance as a key mental toughness characteristic. As previously discussed set backs are somewhat more prolonged and require more time to deal with them. Most athletes make mistakes and if the discipline allows the athlete time to correct the mistake and recover their performance then dealing with mistakes is a necessary skill required for winning. Dealing with set backs and becoming a tougher athlete is not easy if the setback is perceived to be extremely important and attached to a major competitive performance that happens only once every four years, such an Olympic final. The interpretation of the following examples demonstrates that the severity of the setback can determine the length of the recovery period.

Missing out on an Olympic medal by six tenths of a second in the year 2000 was a tough blow to take, and that definitely contributed to me missing the world championship team the following year. I didn't really know where my head was, that was definitely responsible for that poor year. The Olympics, is black and white, if you're aiming for the medal and you don't do it then you've missed out and that's it.

I didn't know whether to call it a day in my career and move on and do other things with my life. It took a lot of time to try and figure out what was going on and what the deal was. I don't think I dealt with it very well. I kind of ran away from the sport for about 5 or 6 months and then coasted for a little while. It was a good example of me not being mentally tough and not jumping back up from a defeat. It's not easy to be mentally tough following a defeat like what I went through. Elite Athlete 25- Swimming (dealing with setbacks)

However the way in which people deal with setbacks is perceived to be an indication of their mental toughness. The above athlete was eventually tough enough as he achieved an Olympic Bronze medal in Athens 2004, proving setbacks can make people tougher, if used constructively. The following athlete describes his personal experience when overcoming serious illness and places a setback in some form of perspective:

I had a real set back in that I was very sick and I got through that and got medals at the Commonwealth Games. I'm convinced that what I went through back then definitely made me tougher. Some of the pain I went through when I was really ill was so much more painful than anything I experience in swimming. I had these (towards the end) really horrible stomach pains which made me vomit and that was so much worse than anything you have to endure in a swimming pool. Training pain is not the same thing, it is easier, and so, I think that definitely made me tougher. Elite Athlete 37-Swimming (dealing with set backs)

Elite athletes sometimes have to endure many defeats in order to develop their mental resilience. Mental toughness may well be developed through learning from failure and using failure as a stimulus to work harder for success. The two following athletes suffered major setbacks related to losing major finals and non-selection for an Olympic Squad.

Interview data (Direct Transcription)	IPA (Transformation) –Supporting code / Concept
<i>I lost 10 grand prix finals before I won one! The 11th one was the first Grand Prix final I won, excluding the Europeans Men's Doubles and National Titles. I analysed them all and realized that I only really lost 2 out of the 10, as the rest of the time I had been beaten by better people or my partners</i>	External attribution which is self protecting of the athlete. An analysis that attempts to justify the defeats and make them more acceptable even though difficult to deal with the failures. The implicit learning effect from having the final experience made the athlete tougher in the long term. The athlete did not accept that a mental

<p><i>hadn't played up to scratch. There were one or two occasions in that I didn't perform to the best of my ability. I had been beaten by Olympic champions and world champions and learnt from it.</i></p> <p>Elite Athlete 1-Badminton</p>	<p>weakness may have been developed through the losing experiences.</p> <p>Dealing with setbacks/ Dealing with setbacks</p>
<p><i>I think it's quite important. I was going for Atlanta 1996 and missed out by a point in selection, and I was down for about three months, but I wanted to go for the next one in Sydney 2000. You have to be strong and decide what you want to do. It was a big decision; at the time you need to take stock and I would say that you have to fail in order to succeed. I think if people take a setback the right way it can help them, some people don't have that and they can't really deal with it.</i></p> <p>Elite Athlete 9-Badminton</p>	<p>Dealing with a major setback is linked to intense intrinsic motivation related to knowing what you really want. The requirement of failing in order to succeed is important as it provides one with a sense of purpose and meaning. The implication there is a right (correct) way to take a setback as opposed to a wrong (incorrect) way. The important interpretation of the setback is knowing that it may be required for the learning process.</p> <p>Dealing with setbacks/ Dealing with setbacks</p>

Table 5.22 Selective Findings related to 'Dealing with Setbacks/ Mistakes' within the Elite Athlete sample

Confronting a setback in the examples above which may expose personal weaknesses is somewhat threatening to some people, particularly if they have big ego's and facing up to reality and dealing with it is what tough athletes do and lesser ones tend to avoid. Overcoming set backs takes time and sometimes pays big dividends if the athlete is prepared to put the necessary work in and become mentally tougher:

Setbacks can do people favours if they learn from the set back. Because I learn from them, I went away and we analysed what was wrong. We had to come away from that particular experience and know we are going to become better rowers, mentally and physically. That came from learning from setbacks. Well to me, from that set back we were able to learn, and then that is when the work has to happen. Elite Athlete 2- Rowing. (dealing with a setbacks)

As with 'dealing with distractions' it is very important to understand from a personal perspective what the nature of the setback is and its personal meaning to the athlete. Merely categorising setbacks as similar experiences for athletes is not acceptable on a personal level as setbacks have different meanings and potential consequences for people based on the seriousness of the setback, the potential impact on ones lifestyle /

sporting career or the impact on one's personal health. Previous research has failed to identify such important differences.

There is no doubt that experiencing a major setback is something that all athletes have to deal with through their careers. Elite athletes compete for massive stakes and the loss is potentially greater as the competitive level increases, together with the importance of the event. At the Olympic Games, when athletes are medal contenders and going for Gold dealing with a setback is arguably more difficult. A world class Equestrian performer who suffered Olympic failure describes such an experience:

Yes, I think you learn to accept it even though it is heart breaking at times. If you are a younger rider coming through and you have a setback you need to deal with the things that go wrong and you have to learn to cope with it. You enjoy the good times and accept that just around the corner there's going to be another big upset. That's what makes it exciting for me, and it's enthralling to be involved in it all. At the last Olympics in Sydney 2000, I had won the Badminton horse trials in the spring. The horse was really on form and had beaten all the top opposition along the way and we went out to Sydney, but it didn't go quite according to plan. It's heart breaking, knowing you have done all the preparation for it. I thought, well you have to keep on trying and look forward to the next Olympics in 2004, because at the end of the day you have to be realistic, and it's just one of those things. You then have to try your utmost to try and make it happen. Elite Athlete 21- Equestrian. (dealing with setbacks)

It seems that the athlete perceives that age has different effects on how athletes need to deal and cope with failure. Being young there is a necessity to accept that you need to learn from the experience and a sense of resolution that another setback will happen, it being just a matter of time. With age, it seems one gets wiser and more reconciled to the fact that no matter how good the preparation, other factors influence performance and a sense of realism is required backed by intense motivation to succeed in the future. Such a personal perspective may not be shared by others, but for this athlete experiencing failure means exactly that. IPA provides evidence that setbacks mean different things to different people.

Event pressure is also perceived to be connected to having a 'winning mentality'. This concept emerged from a variety of key codes related to the concept title. Findings

show there are numerous ways of describing mental toughness in terms of what constitutes a 'winning mentality'. Basically, the key points provide a comprehensive list of what may be considered as characteristics of the psychology of winning. Figure 5.11 shows the conceptual structure which demonstrates the diversity of phenomenological interpretation of such a concept as 'winning mentality' and provides evidence that it can hold many different meanings to people. Table 5.23 provides some direct examples from athlete quotations to support the above conceptual framework.

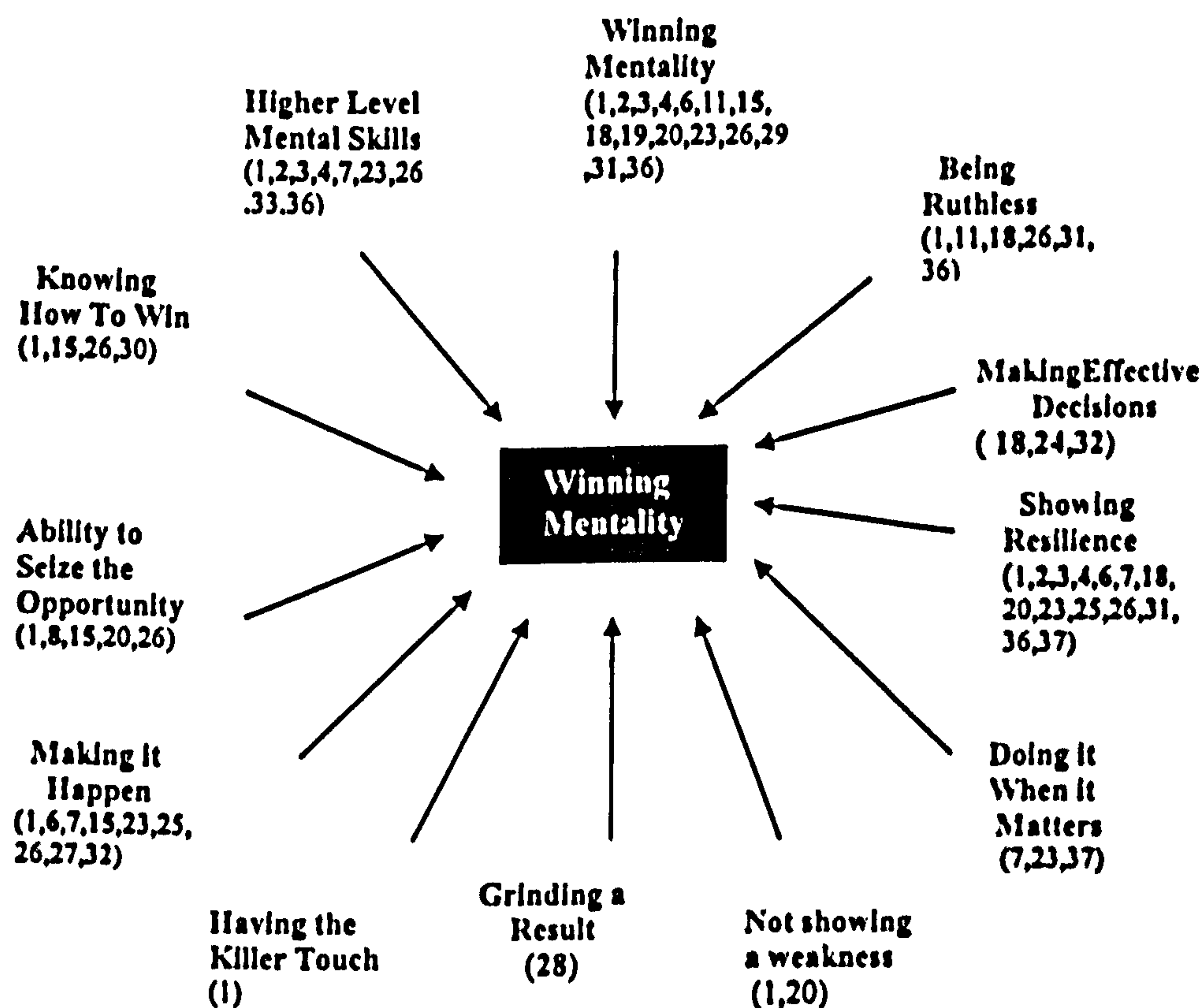


Figure 5.11 The emergence of 'Winning Mentality' as a concept and its supporting codes (key points) in the Elite Athlete sample. Interview sources are in brackets, females in bold

Direct Data Source	Interview Script	Key Point Code (meaning)
Athlete 1	<i>I think you learn that by winning and knowing yourself and by being in that situation before. Knowing how to win at the same time</i>	Knowing how to win
Athlete 30		
Athlete 26	<i>I mean the better you are mentally the easier it is to be tough because you are very rarely rattled</i>	Higher level mental skills
Athlete 20	<i>When I am down is when I am stronger</i>	Mental resilience
Athlete 1	<i>You have to make things happen in your life and if you don't you it will pass you by. You have to be prepared to go through hell to make it happen.</i>	Making it happen Ability to seize the opportunity
Athlete 37	<i>The biggest thing for me in mental toughness is doing it when it matters. I have known really tough trainers and even though mentally tough trainers they have not been able to deliver in competition.</i>	Doing it when it matters
Athlete 28	<i>We were just kind of grinding it out, grinding it out and then we scored, we were just hanging on at the end.</i> <i>People that are like me are just continually grinding it out</i>	Grinding a result Grinding a result
Athlete 18	<i>In road racing you don't win anything for being nice! In the later stages you just can't be and if you do then you just won't win.</i>	Being ruthless
Athlete 8	<i>He is the one who will hang in at the deciding frame, or like, you know, being 8 nil up or five nil down, at the end of the day he wants to be the winner.</i>	Winning mentality

Table 5.23 Selective athlete quotations to support the 'Winning Mentality' conceptual framework in the Elite Athlete sample.

Overall, athlete interpretations of the term 'winning mentality' are diverse and the concept is capable of being explained in many different ways. It basically allows people to offer perceptions of what they consider to be important mental factors related to winning and there are potentially multiple explanations that people hold for a winning mentality. IPA would suggest that a winning mentality is a significant concept in being able to deal with event pressure but is comprised of many different possible strategies and interpretations. Having a winning mentality is a complex issue

which very few athletes fail to master and its complexity displayed in the findings would explain such difficulties due to its multi-dimensional nature.

4. Self Confidence and Belief

The category was generated from two directly related substantive concepts self-confidence and self-belief.

Emergent concept	Supporting Code (Key point)	Source of Data Elite Athlete Interviews
Self Confidence	Self confidence Self confidence in ability Respect from others Knowing your tough State confidence On the day confidence In training programme	1,2,4,6,7,8,10,11,12,14,15,17,19,20,22, 23,24,25,26,28,29,30,35,37 1,2,6,7,8,9,14,19,29,31,32,34,35 2,3,4,6,7,15,20,26,27,31,32,35,36 7,20 2 2,3,6,10,15,19 9,2,3,6,15,20,26,30,32

Table 5.24 Supporting codes for the concept 'Self Confidence and Self Belief' within the Elite Athlete sample. Female responses in Bold in the far right column

Table 5.24 shows the support for each of the coded properties of the total concept.

Self confidence is a crucial mental factor in mental toughness and perceived as such by many participants. Confidence in ones ability is central to overall confidence and if highly confident in ones ability it provides an element of mental toughness because it fuels self belief and there is less worry attached to performance. The following quotation attaches meaning to such a level of confidence.

I was just so confident that I just went in there and did the job. I knew before I went in that I was going to do the job, and I knew everybody else wasn't and I just went in there and did the job. Elite Athlete 2 - Rowing (self confidence)

The findings show overwhelming support that self confidence is vital to mental toughness and there also seems to be an inverse negative relationship between high self belief and low cognitive anxiety. This was supported by an Olympic Bronze medallist in Atlanta 1996, who states:

I think it can make you tougher mentally, yeah. If you believe in your ability a lot more, then you are mentally tougher. If you believe you are the best or one of the best in the final, then I am sure you just walk around with your whole persona really showing you mean it and worry less. When you are there people will recognize it, you think you are the best, one of the best there, it can really help you. Elite Athlete 35 –Swimming (self belief)

Table 5.25 contains a selection of emergent statements and the relevant IPA links them to the grounded theory conceptualisation. Overall more than 70% of the athlete sample perceived that self confidence / self belief was strongly associated with mental toughness. Findings show that self confidence helps one achieve success but self belief adds an additional dimension in that athletes expect success. When athletes are high in self-confidence they are much more in control of their performances as explained in the following collection of statements.

Emergent Concept	Interview Quotation	IPA Interpretation	Key Code
Self Confidence	<i>When you get there you need to be just relaxed & confident you have done all that anyway.</i> Elite Athlete 10- Swimming	Confidence and being relaxed (low levels of anxiety) are related Knowing that the training has worked provides confidence on the day	Confidence in the training programme Confidence on the day
Self Confidence	<i>If you are playing well, confidence is up, and then you are going in as a much stronger person.</i> Elite Athlete 15- Badminton	Confidence linked to current form Confidence provides Inner strength	Confidence on the day Self Confidence
Self Belief Self Confidence Self Control	<i>The demand in Barcelona was huge, so I think I was equally as confident but I think we need to bring in self-belief and control.</i> Elite Athlete 2 – Rowing	Expectations (demands) possibly linked to confidence levels Indication self belief and self control are separate issues (follow up interviews)	Self Confidence Self Belief Self Control
Self Belief	<i>We prepared so well for that. I totally believe that we could win and it is that believing I think.</i> Elite Athlete 6 – Badminton	Preparation is vitally important for confidence and self belief Believing a win is not only possible but an expectation is different	Confidence in the training programme Self belief

Self Belief	<i>I would say belief is basically the key to it all, if you don't believe then you haven't got a hope in hell. I believed it because I thought of it as a process and let the outcome deliver itself. I believed if I did all these factors correctly then actually there was a very big chance that I would achieve what I wanted to. Elite Athlete 32 –Canoe Slalom.</i>	Having self belief is the most vital ingredient to mental toughness. Not focused on outcomes but the process of performing. If the work was completed in an effective manner then the rewards (medals) would be possible. A rather systematic approach to training and preparation.	Self Belief Confidence in the training programme
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Table 5.25 Examples of emergent codes and concepts from IPA within the Elite Athlete sample

Overall, self confidence and belief in ones ability to achieve ones goals are characteristics which have been most consistently related to what makes an ideal mentally tough performer (Bull *et al.*, 1996; Goldberg, 1997; Gould *et al.*, 1987; Graham and Yocom, 1990; Hodge, 1994; Kubistant, 1986; Lochr, 1982, 1993 and 1995). The findings also offer support for recent empirical research such as Middleton *et al.* (2004) and Bull *et al.* (2005) who identified self efficacy and self belief respectively, to be major contributing characteristics of mental toughness.

The concept of self-control and discipline was strongly connected to the previous category in the sense that self-confidence provides the performer with a strong internal locus of control and a belief that they have the necessary skills and abilities to perform well.

5. Self Control and Discipline

Having self-control and maintaining control has been previously related to mental toughness (Bull *et al.*, 1996; Goldberg, 1997; Lochr, 1991) but such work lacks research support. Having the ability to maintaining mental stability is crucial, if one is to succeed and this is recognised by participants as being part of being a mentally tough competitor. The category emerged from several related concepts self control; self discipline and realisation, independence and responsibility, reactions to others and

emotional control. Self discipline and self control are closely related concepts and this was highlighted by a former top level athlete who is now an elite level coach:

Yeah you have got to be self disciplined in any sort of top level sport, physically and mentally, that you know you have got to stay on top of it all. Elite Coach / Athlete26- Badminton (self discipline)

The statement also attaches meaning to the fact that performing at the very top level demands self control and discipline and if one lets it slip then it access to the elite performance level may be threatened. A female silver medallist in Sydney 2000 emphasized self-discipline as a major ingredient within mental toughness, when comparing her mental toughness from Atlanta 1996 to Sydney 2000:

- *No I am just as tough as I was then, but I am more disciplined now.*
 - *I am more responsible definitely. I think I am more disciplined. I don't know if that came with motherhood or not.*
 - *It has improved my training discipline because I know now I can only train in certain times of the day.*
 - *Mental toughness / strength encompass discipline and toughness.*
- Elite Athlete 15- Badminton (self- discipline)

The above quotations recognise that such mental characteristics are capable of being developed and improved over time with the necessary commitment and desire to compete. It does however place self discipline as a central aspect of what encapsulates mental toughness.

The emotional component within self control was also linked to the aspect of total control. It seems that emotions have both a positive and a negative effect on performance and it is how the athlete is able to channel such emotion that determines how tough they are. An Olympic bronze medal winner in Sydney states:

I don't know really. I mean I can get quite emotional on court, sometimes it is a good thing, and sometimes it is not. Depends, sometimes it gees you up, and sometimes it is negative. Elite athlete 15- Badminton (emotional control)

The power that emotions have to charge an athlete up and influence a performance is unquestionable and having the control and ability to channel them is one key to a

successful performance and possibly a mental toughness link. There are times when athletes have to perform when in emotional turmoil and they have used it to their advantage. One athlete graphically describes her experience prior to winning a silver medal in Sydney 2000.

Interview Quotation	IPA – Transformation to concept / CATEGORY
<i>You need to channel the emotions. The major problem with emotions is that they are difficult to predict. You can really struggle. You know they do not always agree when to tell you bad news, somebody dies and they won't tell someone before a race in case they fall off the handle! I must admit I trained before 1996 for three years and I did really hard sets. The same sets all the time and got fitter and fitter each year. My mum was diagnosed with cancer just before the 1996 Olympics, and I basically pulled the rowing scores then that I never ever pulled again. It was so easy and I was so angry and so determined that it blocked out everything. I was able to use emotion to do that. Elite athlete 3- Rowing</i>	<p>The athlete uses the extremely adverse situation to channel her emotions into her performances in a positive way, even though she was deeply emotionally affected by the news of her mother's condition. In dealing with adversity the athlete experienced increased anger and determination that contributed to performances never to be improved. Emotions are unpredictable and unstable entities and they emerge from unforeseen situational events, reactions to which may vary. It is up to the individual to channel them. When directed to a performance in a positive way anger can be a powerful emotion.</p> <p>Emotional control / SELF CONTROL & DISCIPLINE</p>

Table 5.26 Elite Athlete perception of ‘Emotional Control’ being linked to mental toughness

Mental Toughness in terms of emotional control and dealing with adversity is recognised and this supports the work of Middleton *et al.* (2004), which basically postulates mental toughness is centrally related to such matters. In fact, athletes may well use other forms of emotion such as anger and hatred much more than commonly accepted in their performances, as highlighted by the same rower:

I would say that I used hatred very much and use it a lot in training. I look across in training and in racing and I hate the person so much, because they are causing the pain. If they weren't there it wouldn't hurt (emotional control)

The above perception uses negative emotion as a positive inspiration to propel performance and increase mental toughness. It attaches blame and some form of rational explanation as to the cause of the pain being experienced and the need to find an outlet for the emotional release.

Overall, the integration of self confidence, belief and control /discipline provides support for the fact that a huge part of overall mental toughness is perceived by elite athletes to be related to such important aspects of the self and might well be largely internally driven.

6. Dealing with Training and Situational Issues

Training and situational toughness as a category connected many external factors that athletes are required to deal with which basically happen outside of the direct competitive performance but if not handled effectively may well destroy the athlete due to the enormity of what has to be considered. The category integrates two major concepts but includes a wide variety of coded properties. Table 5.27 shows the situational and training issues, which contribute to the category together with the athletes who considered the sub-concepts (key codes) to be important.

Dealing with Situational Issues	Media exposure	7
	Non selection	2,16,29
	Team pressures	12,16,28,34
	Having the opportunity to medal	20,36
	Dealing with a life threat	7,17,37
	Dealing with captaincy	12,28,34,36
	Dealing with team mates	6,9,12,15,16,20,26,28,29,30,34
	Dealing with different conditions	2,8,12,26,33,36
	Travelling lifestyle	15
	Lifestyle demands	2,6,8,10,15,19,29
Training Factors	Dealing with a circus environment at the Games	7,25,35
	Competitive selection	3,4,9,16,29
	Lifestyle issues	2,3,4,6,8,10,15,19,29,34
	Competitive training	2,3,4,8,11,20,26,36
	Training toughness	2,3,4,18,20,27

Table 5.27 Supporting codes for the concept 'Training and Situational Toughness' within the Elite Athlete sample. Female responses in bold in the far right column

The table demonstrates the wide variety of factors, supporting the major category, which provide evidence that such perceptions of mental toughness related to the

specific characteristic mean different things to different people. Within a wide variety of supporting codes the most substantive codes being dealing with team-mates, coping with different conditions, lifestyle demands and lifestyle issues together with training factors. Lesser mentioned themes but equally important was the need to having to deal with a life threat. Such IPA allows meaningful themes to be recognised as important contributing factors.

Training toughness was identified as a by product of overall toughness and one in which toughness is developed within athletes prior to important competitions. Tough training may well produce tough athletes and athletes reflected on the relationship in their comments.

We trained really hard; we trained harder than any of the other teams. The coach gets you to do a lot of high lactate interval work. He teaches you to be very in tune with the physical pain that you are going to experience. I remember doing sessions above race pace and you're doing it really hard and you think you can do about 4 and you have 16 to go and somehow you get through them all. Elite Athlete 3- Rowing. (training toughness)

We were being extremely competitive, when we were training and we were very very competitive every day, I mean I was even competitive off the water. Elite Athlete 4- Rowing (competitive training)

Competitive training for some required more than just hard work; it needed a race situation, as a cycling medallist in 2002 comments:

I would say that I get most of my really hard training from racing. I really need to race, personally I find it quite difficult to really push myself in training, to physically push myself, but I can do it when I'm racing. Elite Athlete 18-Cycling (race training)

It seems mental toughness is required and developed in training but really tested out during the major event. Athletes may work on being tough performers in training but not until the major competition happens and the 'event pressure' is on, do they really find out how tough they are?

Lifestyle issues emerged as an important contributing factor. However, the perceived importance of the lifestyle factor and its potential impact on the athlete may well determine the degree of toughness in the response. Lifestyle issues include athletes

studying at university whilst preparing for major games, illness, relationship problems, being a part time athlete, financial worries, and a travelling lifestyle and all what it entails in terms of personal discomfort.

Dealing with lifestyle pressures such as studying for a degree is common for many elite athletes and this creates additional pressures. A bronze medal athlete from Atlanta 1996 explains:

At the moment my goal at university is all I really want to do is make sure I pass all my exams. I am not after getting a first, just want to pass everything and get a half decent mark so I can carry forward to the final year. That is it; don't want to put too much pressure on myself at university. I'm still out at half five in the mornings, not getting in until say half eight at night, then normally do a couple of hours work to half ten / eleven and then have to get up again the next day. So doesn't make the easiest life really. Elite Athlete 35- Swimming (lifestyle demands)

Overall, wider situational factors and dealing with them seem to contribute to what athletes perceive what mental toughness is all about. The issues that emerged such as problems with captaincy, team selection and squad selection, mental toughness related to different situational demands such as types of event, conditions, training versus competition and dealing with team mates all provide additional demands on athletes which require an element of toughness peripheral to the competitive event.

Having to deal with additional demands on top of performing in competition is very difficult and may require athletes to extend themselves well beyond what they consider their comfort zones to be. The final category, which emerged, considers 'physical coping ability' and the possible link between physical and mental toughness.

7. Physical Coping Ability

The final category connected three interrelated concepts 'physical fitness', 'coping with physical discomfort' and 'extending oneself beyond the comfort zone'. Physical fitness emerged from two key coded themes physical toughness and physical confidence both of which were well substantiated through interview data (see Appendix C, Volume 1).

Physical coping ability reflects the ability to combat physical discomfort and being physically tough. One rowing medallist perceived it was a major aspect of being mentally tough for her specific discipline:

The over riding of the physical pain in my sport is probably the most fundamental one for mental toughness. Elite Athlete 3- Rowing (dealing with pain).

In endurance events, pushing the pain threshold is part and parcel of training and this was clearly explained by an elite swimmer:

Like training, when your ache, the pain is kind of forgotten as soon as you touch the wall, sometimes if your time is good, you forget all the pain, but, if your time is bad you remember every little pain that happened, each inch of it. In training we do thirty 100 metre sprints flat out, maximum effort all of them. Pain like you never felt before, swimming for 35 minutes at like a pulse rate of 190, the pain is unbelievable. Elite Athlete 19- Swimming (combating physical discomfort / dealing with pain)

Several athletes cited having physical confidence as an important contributing factor to mental toughness. It seems by being in top physical shape one can gain more confidence. Typical examples being:

You also know if you're physically stronger than the rest than you feel better mentally and more confident. Elite Athlete 9-Badminton (physical confidence)

I am thinking about being confident physically. I have done all my training and I can technically do this and I have got the tactics behind me and everything about this whole approach has been perfect, so I can be so confident. But I have also got to believe in that confidence. Elite Athlete 2- Rowing (physical confidence)

Being physically fit is not enough to win medals at the top level and an athlete requires strengths in as many disciplines as possible, although to an extent the type of event will dictate the specific requirements for performance. Athletes did consider the mental – physical link and recognised that in being a complete athlete a person has to have all round qualities, particularly when suffering discomfort:

To push yourself through big pain you have to be mentally tough. You can be physically strong and gifted but can be mentally weak. Elite Athlete 17 – Canoe Endurance (dealing with pain / combating physical discomfort)

Rowing, as a discipline requires huge amounts of both physical and mental energy and one rower within the sample recognised exactly what she considered characteristics of mental toughness to be associated with:

Mental toughness is the ability to over – ride the pain messages the body sends to your brain (which is very, very important), as there are different ways and means that you learn to deal with that. Secondly, it is the ability to push yourself beyond your mental and physical limits. But the over riding of the physical pain in my sport is probably the most fundamental one for mental toughness. Elite Athlete 3 – Rowing (dealing with pain)

In coping with discomfort the athlete above explains exactly how she prepared the evening before an Olympic final in terms of developing her mental toughness in relation to a previous experience:

I asked how I would physically feel at the end of the race. For me it was the hardest race I'd ever had apart from that was the 1996 final in Atlanta where I couldn't move for about ten to fifteen minutes afterwards, I was so exhausted. I wanted to feel that sort of pain, which in way would make you connected to each other. It was about how we were going to over –ride the pain that was, a way of getting ourselves up to be able to receive it, which was mental toughness. Elite Athlete 3 – Rowing (dealing with pain)

IPA alludes to the possibility that shared pain bonds athletes in teams. The issue of dealing with physical discomfort and pushing the limits of physical fitness relate very closely to the last concept, which contributes to the category ‘extending beyond the comfort zone’.

Table 5.28 outlines the variety of key codes linked to the concept and the relevant interview sources. It is noticeable that the majority of the athletes are from a rowing background and all female.

Extending beyond the Comfort Zone	Extending oneself Pushing oneself Going beyond where never been before Team application beyond comfort zone	2,3,4,19, 24, 2,3,4,34 2,3,4,
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Table 5.28 Conceptual make up of the category ‘ Extending beyond the comfort zone’ In the Elite Athlete sample- Interview sources included(All female athletes)

Such data is rather surprising given the physical pain and enduring training programmes experienced by elite athletes contending for medals at major championships. Detailed phenomenological inquiry is also concerned with the researcher asking questions of the participant's responses in an attempt to locate issues which the participants themselves may be less aware of. The small minority of athletes who recognised that mental toughness is about 'extending beyond the comfort zone' may be reflective of the entire athlete population but such generalisations must be treated with caution as it violates more idiographic approaches to understanding meaningful data.

Although not a heavily quoted dimension it was considered important to endurance-based disciplines such as rowing, road cycling and river kayaking. Athletes compete in extremely physically demanding events in which high levels of pain tolerance are experienced contributed to this dimension. In contrast, it was not reported as a factor in the elite cricket study by Bull *et al.* (2005), but Jones *et al.* (2002) did report it.

It may require that athletes have to be prepared to produce performance standards which have never before been achieved in training or in competition and this may require reaching new pain thresholds. This was well explained by the medallists in Sydney:

We went out we knew we had to go out and do something that we had never done before; we had never done in training before. We put in a tactical move, which we had never tried to do before. This was in order to push and see whether or not other people would crack... So we had a blazing push in where we would raise our performance and never get any slower. The whole thing may well blow up, and that's what we did and we agreed to do it and we did it. That's how we managed to push ourselves into contention for the silver medal and it happened over a two-minute period. Elite Athlete 3-Rowing (extending beyond the comfort zone)

It maybe depths to which athletes have the courage to explore their mental and physical reserves are somewhat unknown and they ask questions of themselves, which

test their mental and physical capabilities. Another medallist from the Sydney crew offers:

This is one of the things we said. You assume you have a well of a 100% and you think you can go there. But in fact you go 25% beyond that if you think you can. It is very dangerous to say there is a finite amount of mental toughness to tap into to. Mental toughness is all about going beyond that. That's why people don't go there and the people who do go there win Olympic medals and do personal bests that are way outside what people expect, and they end up winning. Elite Athlete 4- Rowing (Extending beyond the comfort zone)

Such acceptance of dedication and commitment to achieving success are not that common even in elite squads of athletes. There are massive differences on the lengths that individuals are prepared to sacrifice themselves in the cause for winning a major championship medal and 'extending oneself beyond the comfort zone' demonstrates such differences are within people and not others.

Finally, dealing with discomfort and pain from an on-going injury was offered it shows that people extend themselves way beyond their comfort zones when battling for medals, whilst carrying injuries. This is highlighted by a Sydney 2000 bronze medallist and the example includes supporting IPA analysis:

Athlete Direct Quotation	IPA Analysis supporting key code / concept/ CATEGORY
<p><i>It's tough become you're carrying injuries and you know that you have limitations in varlous areas of the court. You have to put that out of your mind and focus on each rally and you know that you have to do this without sometimes using your best asset. I had to block the pain out at the end of the day. You also have to block the emotion out of it to. You're thinking that this could be the 1st ever-British medal. Also we played the day before and lost that to get to the final, which was really tough to deal with; you have to block that out too. It was a hard thing to do and some people can't do it. That's where the top boys come through.</i></p> <p>Elite athlete 1- Badminton</p>	<p>Carrying an injury is mentally demanding as it imposes limitations to an already demanding event.</p> <p>There is a need to block out the injury and the pain and maintain focus on the task whilst being limited in your abilities and skills.</p> <p>The injury also has emotional attachments that need to be dealt with.</p> <p>Distracting thoughts interfere and create another barrier fuelled by expectations. Previous events (failure) need to be also controlled and these thoughts are being experienced on top of the fact that the injury is at the forefront of ones mind set.</p>

	<p>All in all a complex combination of mental issues that need to be tackled in the quest to medal in a major final. (Dealing with physical discomfort / dealing with pain/ blocking out) Physical Coping ability PHYSICAL COPING ABILITY</p>
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Table 5.29 Example of Dealing with Pain and Discomfort – Elite Athlete 1

The above example provides evidence that mental toughness is not linked to single characteristics of mental prowess being displayed; it is usually associated with a variety of psychological characteristics being addressed and related to a sporting situation or event which need to be dealt with effectively, usually involving adversity. This is evident within many of the examples offered by participants in that mental toughness characteristics do not work in isolation but operate simultaneously to provide what is considered to be mental toughness behaviour. These can be an assortment of cognitive, affective and behavioural characteristics working together.

Summary

This chapter has attempted to present the results from the three sample groups within the framework of grounded theory analysis and supported by interpretative phenomenological analysis (IPA). It has attempted to show how the data from phenomenological interview emerges from initial inspection and data coding (key points), to concept and category formation using direct practical examples from initial inspection and data coding (key points), to concept and category formation using direct practical examples from the emergent data in support. By doing so it emphasizes the continued value of employing a phenomenological approach to the investigation of mental toughness. It attempts to show how ‘constant comparison’ technique linked data to form codes, concepts and categories and provided evidence

of emergent theorisation through detailed tables and diagrams which included supporting interview evidence.

The chapter provided information rich data in detailed support of the emergent theory and also attempted to relate relevant existing literature to emergent concepts and categories. Figures 5.2, 5.3 and 5.7 provide detailed summary of how each emergent theory evolved through concept and category development. In terms of outcomes, mental toughness was perceived to be more suitably labelled the 'psycho-physical self sufficiency to survive' by adventurers / explorers and 'medal winning psycho – physical ability' by elite athletes and coaches. Specific focus on how the data was grounded, the emphasis on how its emergent features provide a solid foundation of concepts and categories on which to base the detailed discussion of each theory will be discussed within the following chapter.

Overall, the results demonstrate partial support for selective existing work in mental toughness research, but more *importantly* provide a deeper understanding and re-interpretation of the complex conceptualisation of what constitutes mental toughness from a detailed phenomenological and grounded theory perspective. Previously unreported key code, concept and categories emerged from within three distinct samples to challenge existing work in the area providing the stimulus for further research opportunity and debate.

CHAPTER 6

DISCUSSION

6.1 Discussion

The purpose of this chapter is to:

1. Emphasize the value of a phenomenological method in the generation of meaningful data, re-interpretation and conceptualisation of mental toughness
2. Further explain the development of relevant grounded theories in relation to constant comparison analysis and category formation.
3. Discuss findings in terms of the relevance to existing literature

In doing so it will provide a fresh and unique approach to understanding the concept from three discrete samples which compliments existing work (Fourie and Potieger, 2001; Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*, 2005).

Grounded theory analysis is ultimately dependent upon the 'real data' that supports it and the discussion will provide direct examples from interviews that demonstrate meaningful concept and category relationships within theory development. It is within such theoretical processes that eventual grounded theory is achieved.

6.2 The emergent theories of 'Mental Toughness' as perceived by Adventurers/ Explorers, Elite Coaches and Elite Athletes

In attempting to fully explain each grounded theory the findings for each sample will be presented separately to demonstrate how the EGT was employed, and how conceptual convergence was established to provide theoretical substantiation.

Adventure/ Explorer 'Emergent Grounded Theory'

In order to discuss the emergent theory of this sample reference will be made to Figure 5.2 which shows the dominant emergent concepts within category formation.

Six major categories emerged with each category having at least one dominant concept supporting it. Table 6.1 shows the substantive concept(s) within each category.

Category	Substantive Concepts
1. Safety and Survival	1. Effective Decision Making / Risk Assessment
2. Coping with Success and Failure	2. Dealing with Failure
3. Coping with Stress and Anxiety	3. Coping with Anxiety / Coping with Stress Situations
4. Undivided Attention	4. Dealing with External Distractions
5. Knowing Oneself	5. Self Confidence and Belief / Self Control
6. Physical Coping Ability	6. Coping with Physical Demands

Table 6.1 The major categories and substantiated concepts with the Adventure / Explorer sample (n =21).

Figure 6.1 shows a diagrammatical representation of the grounded process from the adventurers and explorers perceptions of mental toughness. The under pinning meaning attached to such concepts and categories is located within the interpretative phenomenological analysis (IPA-Level 1) and such material provides the foundation of the emergent conceptualisation. The value of the phenomenological method and subsequent IPA is evident when considering the meaningful statements provided by participants and the different perceptions of mental toughness offered throughout. Many individual references were key coded and totalled 78 for the whole sample (n=21). From a phenomenological perspective the initial open coding / key point level of analysis (level 2) and concept formation (level 3) provides the most detailed data and specific interpretation of how people perceive mental toughness. As perceptions emerge they are conceptualised, then categorised and gradually become more integrated and abstract (levels 3, 4 and 5). The grounded theory emerges from the continual theoretical process. Major key codes, concepts and categories are linked through meaningful relationships via direct data sources.

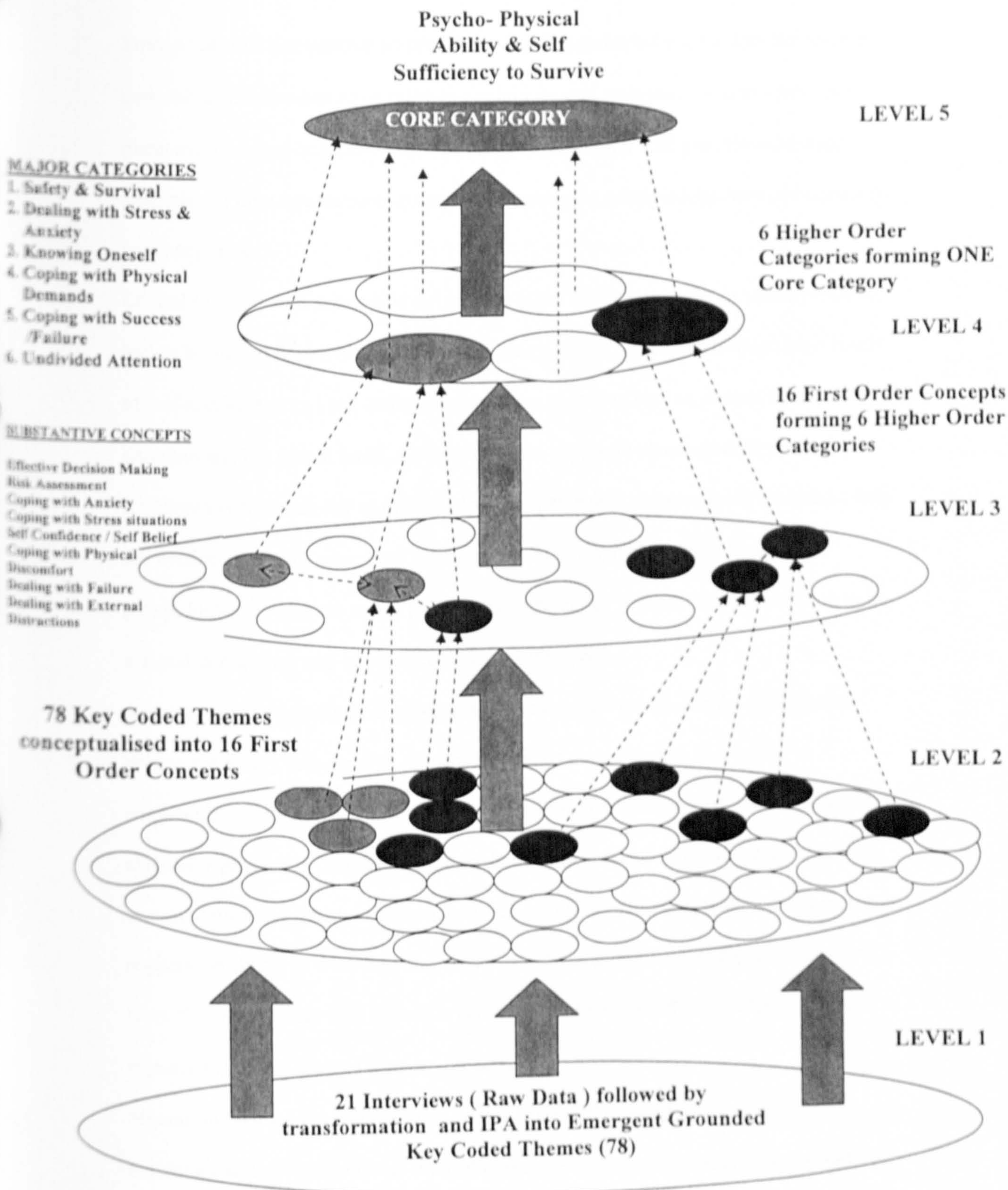


Figure 6.1 – Schematic conceptualisation of Adventurer / Explorer Emergent Grounded Theory

From a research perspective no previous work has provided such a detailed level of conceptualisation when attempting to explain mental toughness as a psychological phenomenon using qualitative methodology. The chapter will provide numerous examples of direct quotations to emphasise emergent relationships between concepts and categories.

Central to safety and survival is the need to make effective decisions under pressure and to be able to deal with external distractions; this is supported through high levels of self-confidence and self-belief, which allow people to stay in control of the situation and the task at hand. Adventurers and explorers also associate mental toughness with the ability to effectively deal with stress situations and the particularly the need to deal with aspects of high anxiety. Self-regulation skills to deal such psychological symptoms are of paramount importance if safety and survival are to be assured in high risk and unpredictable environments.

Apart from the psychological aspects related to mental toughness the sample also related the ability to cope with physical demands and adversity as a major contributing characteristic to the emergent theory. Given most high level adventure is extremely physically demanding and performed in arduous climatic conditions such as mountaineering, polar exploration, ocean yachting or exploring the worlds remotest regions the ability to deal with and cope with physical discomfort has psychological links. Finally, dealing with failure is perceived to be extremely important as many expeditions fail to achieve their set objectives.

Mental toughness is perceived to be centrally related to highly effective self-regulatory skills within adverse environments combined with a high sense of self and the ability to withstand both mental and physical discomfort. If the outcome is

perceived failure then this may be more effectively dealt with if the person has a strong self-concept, which is fuelled, by high self-confidence and self-belief.

Safety and survival is a major category which underpins the essence of what adventure and exploration is all about and making effective decisions emerged as a major concept. Participants perceived decision making to be meaningful to mental toughness only if it was considered effective, if it was conducted within a pressure situation, made with a colleague or as a result of wisdom from experience.

But mental toughness in adventure situations combines psychological characteristics rather than them being displayed in isolation.

Participant Direct Quotation / Source of Interview	IPA / key code & concept/CATEGORY convergence
<p><i>I can remember one of my early expeditions where we did lose a team member, a friend early on into the expedition, he fell and was killed. At that time we all justified staying and having another go at the mountain. I feel, looking back to it now I'm appalled that we did that, and I'm not sure that I would do that now.</i></p> <p>Adventurer/ Explorer 3 - High Level Climber</p>	<p>Decisions are sometimes distorted by emotional reactions to a major disturbing event. Making decisions soon after a traumatic event is extremely difficult and can well be incorrect when retrospective judgement is applied based on more stable emotions. Collective judgements are also capable of influencing individual decisions based on group consensus rather than personal decisions. Decision making in such circumstances is highly complex and involves highly charged emotions. The attraction of the opportunity to satisfy one's ego and summit in the wake of the death of a close friend seems morally unjustified at a later date by the participant.</p> <p>Key Point code – concept transformation:</p> <p>Effective decision making/ Making joint decisions under pressure / Wisdom from experience/ dealing with stress situations</p> <p>Concept convergence:</p> <p>Effective Decision making / Self Control / Dealing with Stress & anxiety</p> <p>SAFETY & SURVIVAL / KNOWING ONESELF/ COPING WITH STRESS & ANXIETY</p>

Table 6.2 Conceptualisation of Decision Making within the Safety and Survival category

In considering the meaning of mental toughness, the previous example provided by a mountaineer (Table 6.2) links self regulation skills to dealing with difficult circumstances and making important decisions with others under pressure.

The above quotation links making an important decision to dealing with a stressful situation (a fatality) and introduces more complex factors into the decision making equation. The climber offers an explanation which deals with emotion and retrospective stress which obviously has implications for future behaviour. The example exudes personal meaning attached to a specific life event which was extremely tough to deal with. Making effective decisions as an adventurer/ explorer is vital but also extremely complex, when combined with the arduous conditions they are conducted within, makes it an extremely important concept contributing to how mental toughness is perceived. The complexity and personal meaning attached to making effective decisions in being mentally tough is supported by the following quotations, IPA and conceptual convergence in Table 6.3.

Participant Direct Quotation / Source of Interview –	IPA & Concept /CATEGORY convergence
<i>Sometimes the right decision is to turn back... to have the mental toughness that says 'I am going to go on under whatever circumstances' can lead so easily to disaster. So it is actually steering the right course and that is not necessarily attaining the objective at all costs Adventurer 2 – Mountaineer –</i>	The participant demonstrates astute awareness of risk assessment and potential danger, although perceptually aware that not achieving the objective may be correct and failure is therefore perceived as mentally tough. Such a paradoxical perception is very rare and really only shared by a small number of the elite climbing community. (effective decision making/ risk assessment/ independence and responsibility/dealing with failure)
<i>The person who is mentally tough can take himself further and go on making rational decisions in extraneous and demanding situations. The person who is less mentally tough is going to make bad decisions at a much earlier stage. Adventurer 2 – Mountaineer</i>	The perception that mental toughness is linked with dealing with adversity of demanding environments and the effectiveness of the decision (rationality) is related to being mentally tough. Conversely if lacking in mental toughness a person is more likely to make ineffective decisions and much earlier thereby risking potential danger. (effective decision making / coping with physical demands)

<i>I think it's an ability to keep going under a great deal of pressure without making mistakes. To be reasonably calm and to be able to keep doing the best things in the situation you find yourself in order to keep going. Adventurer / Explorer 3 – High level Climber</i>	The participant perceives that decision making is a skill, an ability and undertaken in a pressurised climate. A sense of composure is evident and required within the adventure environment, if the objective is to continue. The emphasis is on avoidance of errors which entails making the correct options when presented. (coping with stress situation/ effective decision making)
<i>Everything becomes difficult really when high up and it comes down to weighing the situation up, make your judgements and carry on. You need to keep your emotions in check, stay composed and stay calm. Adventurer/ Explorer 10 - Climber</i>	The perception that effective decision making is significantly more challenging when high altitude is involved and judgements require more careful consideration. Staying composed controlled and having emotional control is perceived as important. Conceptual convergence: physical coping/ risk assessment/ self control (emotions)/ coping with stress situation
	PHYSICAL COPING ABILITY/ KNOWING ONESELF/ COPING WITH STRESS & ANXIETY/SAFETY AND SURVIVAL

Table 6.3 Examples of conceptualisation within the Adventure/ Explorer sample

Such examples provide support for the adoption of a phenomenological approach which allows freedom of expression on the part of the participant. Concepts which emerged were linked with acceptance of failure, effective decision making, risk assessment and independence and responsibility (A2), coping with stress situation and effective decision making (A3), and physical coping, risk assessment and self control (A10). Ineffective decisions in such circumstances can be fatal and the margin for error is extremely small, which is maybe not reflected in the risk being taken.

This is reflected in one participant's comments:

Well I didn't get to the top of K2 'til 6 at night, maybe later than that. So I nearly turned back twice. It gets dark just after 7 in those altitudes. So you've got to have a bit of boldness at times I guess to do things. So you are accepting a higher risk level than most people, but perhaps that's no different to driving, or breaking the speed limit is it? It's accepting a risk level. Adventurer /Explorer 10 –Climber / Mountaineer

Participants engaged in adventure and exploration attempt to rationalise the risk and ultimately the importance of the decision based on the fact that risk is relative and only when ones ability and skills are considered in relation to the risk involved should decisions be evaluated. In essence risk and decisions are complex cognitive processes

which have emotional attachments and because of such complexity are perceived to be central to what adventurers / explorers view as a major aspect of mental toughness. The findings provide support for the concept of risk assessment as a necessary part of an adventure experience, but if too risky, more astute adventurers conceded that life was more important.(A 7,10,20 & 21);

You know where your limits are you are prepared to move towards them (7) ; Some people are prepared to accept greater risks than others , that's what it comes down to(10); I am putting myself in danger on these big mountains which is why I won't do them for much longer(10); So I had another look at the slope and thought, hey I don't care if I'm going to get a million quid out of this, the risk level is just to high for me, I'm going down(20).

Effective decision making and astute risk assessment is arguably refined through the wisdom of experience. Learning from fatality experiences of friends and colleagues focuses the mind on previous decisions and lessons are learnt as a result. On reflection, a climber confirms such thoughts and salient points are highlighted with IPA analysis in the following extract in Table 6.4.

Participant Direct Quotation / Source of Interview	IPA – (key code) / Concept /CATEGORY convergence
<i>Yes, I'm wiser now. I remember the one thing that changed me was after a friend got killed and I remember being with him. One time in particular coming to a crevasse bridge that looked as though it was going to collapse whilst descending. I stepped and I thought we should rope up for this, and the next thing I know he'd gone across it collapsed and that was it. So, that left me to go across it, and luckily the bridge didn't collapse and I saved him. But the following year he was killed descending with someone else, and for a similar sort of reason where he'd gone too far down and he should have climbed up another 10 foot. Instead he thought, 'sod it I'll just risk it' and some ice collapsed, and he went 2000ft and was killed. I always remember that, when I heard he was killed I just flashed back to the crevasse incident which I found very stressful. Adventurer /Explorer 10-Climber/ Mountaineer</i>	<p>Vivid meaningful experience being recalled fuels decision making which improves through wisdom of experience. (wisdom of experience)</p> <p>Retrospection makes decisions and risk assessment more informed but does not guarantee total safety.</p> <p>People make different assessment of risk based on their individual judgments and may be distorted based on being with others – the risky shift may be operating. (decisions with others under pressure/ coping with anxiety)</p> <p>Previous experience is only useful if lessons are learned and behaviour is modified accordingly. (previous experience)</p>

	<p>Effective decisions and correct risk assessment are reciprocally related.</p> <p>Key code transformation into convergence of concepts– Effective Decision Making & Risk Assessment / coping with anxiety</p> <p>SAFETY & SURVIVAL / COPING WITH STRESS & ANXIETY</p>
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Table 6.4 Examples of thematic convergence within the Adventure/ Explorer sample.

Contextual influence of the surrounding environment must be considered. All of the participants within the adventure/ explorer sample had been involved in life threatening situations, and in many cases had multiple experiences of dealing with such assessments.

Making effective decisions requires previous experience, self-confidence and sometimes intuitive awareness. A mountaineer who narrowly escaped death on numerous occasions provides such thoughts:

Obviously in climbing mountains there's an element of risk in it and there's a fine line between confidence and foolhardiness really. I put that down, personally, to the more I see the more I gain experience. By seeing things happen you log all those things in your memory, but I would explain the actual decision as intuitive; I'd say there's a level of intuition involved. Obviously, you have got all that knowledge and experience, but you also require a level of intuition.

Intuitive awareness is important, it's tough to do it but it's also sensible. People who I climb with would agree with that. You know, if someone said to me when we had been packing up kit for half a day to climb and then the guy you're with then says, 'no I'm not going tomorrow morning', I would just accept that, I wouldn't ask him why.

Adventurer/ Explorer 20- Mountaineer / Climber (Everest conqueror)

The climber implies that intuition as a mental toughness characteristic is difficult and climbing communities recognise such a fact. It may well be 'insider knowledge' and non climbing communities fail to recognise such characteristics. It seems that intuition is respected by some climbers and is accepted unconditionally.

The previous examples provide evidence that the adoption of a phenomenological approach which explores personal meaning allows for individual interpretation to be

considered. Making important decisions which can influence life or death outcomes are not simple conscious tasks. They may involve a combination of factors which ultimately influence the final decision. The complexity makes the process one which requires mental toughness.

Assessment of risk cannot be separated from the decision making process and conceptual convergence is strongly supportive of it, and also to the concept of planning and goal setting within the safety and survival category. The psycho-physical self sufficiency to survive in adventure environments involves a complex interaction of psychological issues contained within the six major categories.

A typical example is provided when considering the relationship between 'physical coping ability ' and 'safety and survival' categories. One of the world's top high-level mountaineers comments on the link with effective decision-making and coping with physical discomfort in Table 6.5.

Participant Direct Quotation / Source of Interview	IPA –Concept /CATEGORY convergence
<i>Well on a big mountain like Everest it is mostly mental climbing. Because the technicalities are not particularly difficult, it's just arduous. It is all mental; just pushing on through the pain barrier.</i>	A distinct attempt to categorise different forms of climbing. 'Mental' climbing is interpreted as less difficult but arduous and related to physical discomfort. The implicit suggestion being that more technical climbing is categorised differently but not fully explained by the participant. coping with physical discomfort
<i>But the slip is thinking you've got to be too brave I suppose, and think that you've got to be careful of pushing too much and perhaps ignoring certain weather signs. The slip is to typically forgetting about descending because it is where many climbers get killed. Adventurer/ Explorer 10-Climber/ Mountaineer.</i>	<p>The participant is aware of the danger of mis-perception and incorrect risk assessment due to lack of attention to the environment signs and signals which alert the climber to danger. Also, risk assessment is neglected on the decent where it is acknowledged by the climber that many people perish effective decision making/ risk assessment/ self control</p> <p>Concept convergence: Coping with physical demands / Effective decision making/ Risk assessment</p> <p>Category convergence: SAFETY & SURVIVAL / PHYSICAL COPING ABILITY</p>

Table 6.5 Conceptual convergence of Safety and Survival and Physical Coping Ability

The climber offers a connection reinforced by numerous participants in that survival and physical coping abilities are inextricably related to mental toughness (see Table 6.6 below).

Emergent Category	Supporting Key Codes	Direct Interview source
Physical Coping Ability	Coping with physical discomfort	2,3,4,6,8,10,11,12,13,14,15,16,20,21
	Coping with Altitude effects	2,3,7,10,16,19,20,21
	Fighting spirit	6,15,17

Table 6.6 Emergent concepts and supporting codes in contribution of the 'Physical Coping' category within the Adventure /Explorer sample (n =21)

A prerequisite for experiencing adventure and exploration is the ability to be able to withstand physical and mental discomfort. Over 75% of the sample related the concept/ category to mental toughness and the data emerged from a wide variety of disciplines. Specifically, when altitude was involved the mountaineers linked physical discomfort to issues of decision making.

The psychological aspects of self-sufficiency need to be complimented by the ability to withstand physical pressures and many participants recognised the psycho-physical link. The ability to suffer physical discomfort and to consider important decisions whilst suffering high levels of cognitive anxiety was graphically described by participants as:

The main problem is just the pain, because of the lack of oxygen. The mental stress of thinking is this slope going to avalanche, is that slope going to avalanche? Is the weather going to break? Is my body going to contract cerebral oedema and am I going to die? –Adventurer/ Explorer 10-Mountaineer (Everest conqueror)

The drive was internal though throughout, although I was suffering incredible discomfort, somehow I managed to continue. Adventure/ Explorer 17 – Polar Explorer.

Having to endure suffering over a prolonged period is common to adventurers / explorers without the opportunity to refresh and recharge, unlike the elite athlete, elite

coach sample, whose lifestyles accommodate such opportunities. A polar explorer commented on the enormity of the discomfort experienced. The explorer was a fully qualified physiologist and collected scientific evidence on the expedition to support his comments:

I have hard evidence of what we experienced. ... I'm sure of what we experienced in terms of physiology, as the conditions were very extreme and astonishingly so. We really averaged a state of physical collapse and the results of the muscle biopsies that we collected on route were confirmation of the fact that we were extremely fatigued. It was interesting to note at that point, that, having stopped albeit for walking over stones at that point, we were in a pretty critical position. Adventure /Explorer 17- Polar Explorer

The internal drive that keeps people going in situations of adversity and discomfort must vary enormously, and there has to be massive individual differences in how deep people will dig into their reserves in order to withstand such adverse conditions. It is evident from the findings that categories which make up 'psycho-physical self sufficiency', interact with each other in contributing to overall survival and one successful Everest climber in 1989 comments:

Self-sufficiency and also a tolerance of other people, patience, and the ability to work very hard for concentrated spells. Adventurer/ Explorer 20- Climber/Mountaineer (Everest conqueror)

Decision-making in pressure situations when suffering from physical discomfort requires a great deal of self-confidence and the belief that you are doing the right thing to ensure safety and survival. Sometimes decisions are collective, as when performing in a team and decisions influence all people concerned. Given that teams are defined as two persons or more working together, only solo missions are considered as independent. A mountaineer involved in joint decisions under pressure when attempting to summit a 8000-meter Himalayan peak provides an example of what staying alive means, when faced with a decision clouded by ego and peer pressure (Table 6.7).

Participant Direct Quotation / Source of Interview	IPA –key code/ Concept /CATEGORY convergence
<p><i>There were two Spanish climbers there, and they agreed at first that it was too dangerous and they shouldn't go on. But then one changed his mind and explained he had ropes. I said, 'no, I've made my decision', and explained the rope is going to make no difference to the condition of the snow I said 'what's the point', but he couldn't seem to see that...I thought, 'well it doesn't make any difference to the avalanche potential of the snow'. I said 'no, I'm continuing down', he said 'oh we'll go on another couple of hundred foot and see what it's like, see if it gets any better or worse'. I said, 'right well I've made my decision, I'm off' and I stuck with it and went down. Not long after that one of them went into a crevasse, the crevasse bridge broke or he slipped. So they both came down eventually. Then later on, they went back up, (the two Spanish climbers), but the conditions weren't much better. They pushed the boat out to the top and peaked. The irony was that one of them was killed descending the slope as a result of an avalanche. The other one ended up losing most of his fingers and most of his toes, I think to frostbite. Too high a price to pay... So they didn't assess the risk I suppose.</i></p> <p>Adventurer/ Explorer 10 -Climber/ Mountaineer</p>	<p>Decision making consensus on safety and survival- agreed collective decision, followed by uncertainty and disagreement. Re-assessment based on equipment considered suitable for the risk involved.</p> <p>(The need to cope and deal with a high stress situation)</p> <p>More informed decision due to experience considered more options such as snow conditions. (self belief and confidence in ones self Independence/ being single minded)</p> <p>Different perceptions of potential risk involved based on possible ego and peer pressure. (effective risk assessment / decision making)</p> <p>Independent decision was mentally tough but based on past experience and the fact that the snow was deteriorating fast and conditions were getting seriously poor.</p> <p>No attempt was made to offer advice but fellow climbers had made their decision to continue. Following a potentially fatal slip the two climbers descended only to reverse another decision and turn back to attempt another summit bid. This was to prove a fatal mistake (making decisions under pressure)</p> <p>Concept convergence:</p> <p>Coping with a Stress /Anxiety Effective decision making Dealing with Failure</p> <p>Category convergence : SAFETY & SURVIVAL / COPING WITH STRESS & ANXIETY/KNOWING ONESELF/</p>

Table 6.7 Example of conceptual integration within Grounded Theory analysis

From a phenomenological perspective the research objective is to provide meaningful interpretation of the text that allows connections to be made to support theoretical conceptualisation. Within grounded theory such connections are explored during axial coding procedures and emergent relationships are developed. The conceptual emergence of the category 'knowing oneself' which includes the major concepts of self confidence, self belief and self control were strongly reinforced by IPA. The previous chapter outlined the conceptual make up of the category from four major themes. This category was quite possibly the most substantive of all the major

categories and provided multiple evidence of conceptual convergence with other categories.

From a humanistic perspective knowing oneself, achieving self-actualisation and self-congruence are all important to growth and development (Pervin, and John, 1997).

The findings indicate the need to know ones self as central to being independent and responsible and to have self-confidence /belief and control emerged as supporting concepts. Having self-confidence in ones ability influences self-sufficiency and reduces the element of self-doubt whilst making important decisions. Two examples demonstrate this:

No I wouldn't worry too much about negatives, because I think I've climbed a lot and I have confidence in myself and my preparation.

Adventurer /Explorer 10-Mountaineer/ Climber

I was aware that I was very capable and I was probably the most capable in the whole group even though they were all older than me. I had a lot of previous mountaineering experience and had lots of self-confidence. I was able to relate to it and managed to influence the decision to camp through it. I can look back on it now and it has made me aware I had done the right thing. Adventurer /Explorer 13- Polar Explorer

The adventurer implies that effective decision making is not necessarily related to age but to previous experience combined with ability and self confidence. Only retrospection allows decisions to be evaluated as effective or ineffective.

Developing self-confidence is directly related to previous experiences and personal perceptions of competence. A mountaineer who was descending from a successful attempt on K2 one of the world's highest peaks provides a direct experience example:

Participant Direct Quotation / Source of Interview	IPA – (key code) / Concept /CATEGORY convergence
<i>I had seen the other party had been through the day before; there were some tracks there. I'd been through the icefalls several times, so I felt confident and I knew where all the crevasses were in order to jump over them. I knew which snow bridges were weak and the ones, which were strong enough. But the problem being there are hidden crevasses, you could be walking across a flat snowfield and you could just go into a hole. So I had to pull myself together for that.</i>	<p>Previous experience provided self confidence via high perceived ability and competence in relation to task demand. (self confidence)</p> <p>Uncertainty and unforeseen events created cognitive anxiety and the need for self control (coping with anxiety / self control/ coping with stress situation)</p> <p>Risk assessment under pressure and effective decision making with undivided attention due to</p>

But that was a calculated risk. Well I thought, 'I need to go down to base camp', so I went down. I think that it is mental toughness, being able to suffer that anxiety and that stress level, and having the confidence to deal with all that, and being able to recover from it is like, the physical toughness. Adventurer /Explorer 10-Mountaineer /Climber

potential high risk environment. Mental toughness is required in abundance on the decent which is rarely reported in literature. Mental toughness is displayed in unison with toughness of physical recovery. (risk assessment / coping with anxiety / physical coping)

Concept convergence:
Self confidence/ risk assessment / coping with anxiety / physical coping/ self control

Category convergence:
SAFETY & SURVIVAL / COPING WITH STRESS & ANXIETY/KNOWING ONESELF/ PHYSICAL COPING ABILITY

Table 6.8 Conceptual convergence from IPA with Adventure / Explorer participant supporting 3 major categories - participant 10

The statement in Table 6.8 encapsulates the essence of what 'psycho-physical self sufficiency is about. Having self-confidence enables a person to stay in control. Being able to establish an internal locus of control within adverse conditions provides a person with the personal responsibility for self-survival and the internal motivation to continue. Participants perceive they are able to determine the outcomes of events and view the resultant outcomes as being influenced by themselves as opposed to external factors. Self-determination is a key to self-control, and survival in extreme conditions requires people stay in control of the situation. This is exemplified in the following extract from a high level climber:

Participant Direct Quotation / Source of Interview

When I climbed K2 there were six people killed. Three people killed in perfect weather conditions descending from the summit. There were six or maybe seven people killed that year on K2. I was making a summit bid in good weather with three other people. Six people were supposed to be descending from the summit as I went up and I only saw three coming down. Three had fallen off to their deaths in perfect weather, in daylight. So there I was, nearly dark on top of K2 on my own, and I did actually remember thinking 'I'm going to have to pull myself together here and stay in control'.

IPA – (key code) / Concept /CATEGORY convergence

An extremely dangerous risk environment is described by the participant. Knowing that three people has suffered fatal outcomes needed to be dealt with whilst contemplating higher altitude with others. The mountain is a perceived killer and justifies its label each year.(coping with stress situations/coping with anxiety)

The climber uses positive self statements to initiate self control perceiving the potential consequences of 'not pulling oneself together'. The climber is implying that he was not all together (anxious)and the situation demanded immediate response to improve chances of safety and survival. The decision to summit was made

	<p>knowing 3 others climbers had suffered possible fatality. (self control /effective decision making)</p> <p>Concept convergence coping with anxiety / coping with stress situations/ self control/ effective decision making</p> <p>Category convergence SAFETY & SURVIVAL / COPING WITH STRESS & ANXIETY/ KNOWING ONESELF</p>
<p><i>You have to draw on all the skill level you've developed over more than 20 years of climbing in Scotland and the Alps. I pulled myself together and made sure I kept my feet well apart as I was going down on the easy bits, so I'm facing out on the snow slip so I don't catch my crampons, trip and go the full 12,000ft. I could have slid but I kept myself together completely until I got down safely too not far from the tent at 8,000m. It was on the high shoulder up on top of K2. It was more easily angled and even if I fell over I wouldn't go anywhere, it was almost flat.</i></p> <p><i>I could hardly walk at that point, I could only do 20 steps and then collapse in the snow, I was absolutely knackered. Once I'd got passed the dangerous bit, you know, burnt out, I crawled into the tent virtually on my hands and knees. But you've got no option if you're talking about mental toughness; you have to be mentally tough there otherwise you die. Simple as that really!</i></p> <p>Adventurer /Explorer 10-Mountaineer /Climber</p>	<p>The climber acknowledges the importance of previous experience in initiation of a positive response to the dangerous situation. Given the altitude the climber needed full attention to detail on the precarious slope at 8000metres. Still in the death zone the climber the climber was physically exhausted but needed to stay totally focused on technique and avoidance of danger.</p> <p>The climber made a mental note of where high danger decreased. The realisation that the only option available was to not continue and perish. Mental toughness is a by- product of choosing not to die! The climber explains that the decision is not that difficult mentally but physical deterioration may well hinder the ability to reach ones target destination. Knowing 'what' you should do at such altitudes may be different than actually physically 'doing' them.</p> <p>Conceptual convergence coping with anxiety/self control /coping with stress situations/full attention on task/ coping with physical demands/physical fitness</p> <p>Category convergence SAFETY & SURVIVAL / COPING WITH STRESS & ANXIETY /COPING WITH SUCCESS AND FAILURE/ KNOWING ONESELF/ PHYSICAL COPING ABILITY</p>

Table 6.9 Conceptual convergence from IPA with Adventure / Explorer participant supporting 3 major categories – Participant 10

The above example in Table 6.9 connects major concepts and five major categories of the psycho-physical self sufficiency to survive, except 'undivided attention'. The thoughts of a mountaineer in such difficult circumstances are rarely reported. This suggests that mental toughness is capable of being described holistically and as a concept needs to be considered as a global construct rather than a uni-dimensional

one. This is demonstrated by an example of a female climber whilst on Mount Everest who highlighted the need to combat fear whilst making a very difficult decision:

Participant Direct Quotation / Source of Interview	IPA – (key code) / Concept /CATEGORY convergence
<p><i>I was scared, very scared; I had been on the South Col, high up on Everest, in a storm, which was pretty horrendous. I thought (most people up there wouldn't have thought so, but I did) that 'it wasn't the first place that I wanted to revisit', but on the other hand I had to if I was to get beyond the Col and get to the top of the mountain. The weather forecast was bad news and was pretty desperate for climbers, as it was forecast for high winds (65 knot winds) and if those forecasts were right then we could not have done it. Adventure/ Explorer- 18- High-level Climber</i></p>	<p>Admittance of high level of fear (coping with extreme cognitive anxiety) Perception that given a choice it was potentially a life threatening decision. Attempts to be rational considering environment factors were considered balanced against the reward of a summit opportunity. Making decisions with an intense amount of fear inside requires immense courage and correct risk assessment. Astute risk assessment was required as the conditions were potentially fatal.</p> <p>Conceptual convergence: coping with anxiety/ effective decision making/ coping with stress situation/self control/ risk assessment/ dealing with external distractions</p> <p>Category convergence SAFETY & SURVIVAL / COPING WITH STRESS & ANXIETY/ KNOWING ONESELF/ PHYSICAL COPING ABILITY</p>

Table 6.10 Conceptual convergence from IPA with Adventure / Explorer participant supporting 3 major categories – Participant 18

The data in the previous examples show how emergent concepts and categories are heavily related and interact to support the proposed theoretical framework. Less substantive concepts related to dealing with success and failure and undivided attention also provided meaningful evidence to support conceptualisation.

Dealing with failure is extremely difficult, but through IPA it was found it can paradoxically also be satisfying, as two very experienced climbers succinctly offer:

We experience failure occasionally and it just reminds you how wonderful it is to succeed. It is impossible to succeed every time, if you set out your objectives wrongly. Adventure/ Explorer 7 - Mountaineer/Climber
and:

Failures are inner rewarding and not external like reaching a summit. I would say about one in five attempts are failures. Adventure/ Explorer 16 -Mountaineer/Climber (Everest conqueror)

It may be those people who have developed the ability to handle failure and place it in perspective, refuse to accept that failure is all negative. They recognize it has much to offer ones self-development and can be very rewarding if interpreted differently, and used for a positive purpose. They may well be the mentally tough individuals, whilst others wrestle with handling failure as it provides a blow to ones ego:

Well failure is always present in adventure experiences, and it is very hard to put up with. It requires a lot of mental toughness. This race I didn't finish and it has been the first thing I have never ever finished. If it requires mental toughness to deal with that, I will need to deal with it very soon. Adventurer / Explorer 18 - Round the World Yachtswoman

A well grounded conceptual example follows which converges many of the major categories and supports the emergent theoretical framework. It integrates stress and anxiety, knowing oneself, coping with physical demands, coping with success and failure and safety and survival categories in providing a graphic account of what mental toughness means to an experienced adventurer. Having the physical fitness in being able to cope with environmental conditions, which are a result of discomfort from high altitude, exhaustion from adverse weather conditions sometimes determines survival. But, physical and mental reserves are both required in abundance in order to survive an accident. A climber explains a physical and mental nightmare when he had left his companion for dead following his fall into a crevasse and offers a graphic account of his interpretation of mental toughness from direct experience.

The following selective account emphasise the phenomenological and grounded theory re-conceptualisation of mental toughness. There is an abundance of emergent key codes and concept evidence which fully support the category existence within the proposed grounded theory model (Table 6.11).

Direct Interview Transcript Quotation	IPA concept /CATEGORY convergence	Supporting key codes
<i>We were both pretty exhausted at this time and (x) fell over a small ice cliff and broke his leg. We were then in a very serious position, because we were still 6000 metres up on the mountain.</i>	Perception of physical exhaustion coupled with extreme danger due to environment conditions (altitude) and serious injury. High anxiety due to increased concern and worry about survival. Coping with physical demands/ Coping with a stress situation /Coping with anxiety	Coping with physical discomfort Coping with altitude effects Combatting worry about others Composure under pressure
<i>There is no mountain rescue so you have to sort it out yourselves. Basically, there was a huge amount of indecision to start with, just worry and fear and I thought at that point that his accident would lead to both our deaths.</i>	The perceived need for independence. Situation influenced indecision created by high anxiety fear, worry and confusion. Such symptoms prompted fatality fear and a need for immediate coping responses to be initiated. This required mental toughness being able to deal with the adverse situation. The physical task of survival and caring for an injured colleague was both physically and mentally exhausting.	Effective decision making Dealing with prolonged pressure Control of fear Coping with dealing with death
<i>...during the day I lowered him several thousand feet down the mountain and a storm came in during the afternoon and the conditions became more severe..... What actually happened was that I lowered him off the edge of an ice cliff, because I couldn't see where I was lowering him.</i>	Risk assessment / Effective decision making/ Coping with anxiety/ Coping with stress situation/ Coping with physical demands / COPING WITH STRESS & ANXIETY/ PHYSICAL COPING ABILITY/SAFETY AND SURVIVAL/ KNOWING ONESELF	Ability to suffer Handling uncertainty Necessary risk taking Coping with physical discomfort Combatting worry about others

Table 6.11 Example 1 of emergent key codes, concepts and categories from A/E 21

The emergent themes did not happen in isolation and the situation generated the need for the necessary mental toughness characteristics to be displayed. The detailed analysis allows for a deeper understanding of how such characteristics emerge and the meaning behind them. The following selective account in Table 6.12 reinforces evidence which underpins the continuing emergent conceptualisation.

Direct Interview Transcript Quotation	IPA concept /CATEGORY convergence	Supporting key codes
<p><i>...In terms of mental toughness I think the period after cutting the rope was probably worse.. Basically then, after I cut the rope I was on the open snow slope, it was dark and I couldn't do anything much that night so I dug a snow hole and spent the night. It was awful, it was just very lonely and I had the feeling that my decision and my actions had caused (x's) death. That was actually tougher I think, than cutting the rope and what had gone before.</i></p>	<p>MT was perceived to be displayed following the cutting of the rope. Desperation and loneliness set in which included intense guilt about ending the life of a friend and colleague. Having to deal with such responsibility was more intense than the MT of actually cutting the rope.</p>	<p>Dealing with death</p> <p>Coping with physical discomfort</p> <p>Emotional control</p> <p>Control of fear</p> <p>Combatting worry about oneself</p>
<p><i>I was convinced he was dead then. But, I was also quite convinced that I was going to die myself getting back, because I still had this very dangerous glacier to get across. .. It was Mental tough trying to control my emotions yes. In a situation like that you have just got a huge amount of confused emotions. You have fear, shock, horror, guilt and being very very lonely as well.</i></p>	<p>The continued stress of expecting to die and dealing with extreme conditions was considered to demand MT in abundance. A lack of support from a colleague increased the perception of fear and potential injury (death).</p> <p>Self control of emotions and fear /confusion was required. A combination of negative symptoms of chronic anxiety coupled with a sense of loneliness demanded a high degree of MT.</p>	<p>Making decisions under pressure</p> <p>Emotional control</p> <p>Dealing with death</p> <p>Emotional control</p> <p>Self control</p> <p>Dealing with negative consequences</p>
<p><i>The next three days I was in a state of shock. Once you have got yourself out of a situation like that you can control these emotions and control things when you have to ...once you're out of the life threatening situation you can allow yourself to be overcome by all these feelings.</i></p>	<p>When safe and out of danger the emotions are released which in a way were previously suppressed due to the need to apply focussed attention on survival matters. This itself is a post traumatic stress response which is potentially as stressful as the previous direct experience.</p>	<p>Dealing with prolonged pressure</p> <p>Handling uncertainty</p>
<p><i>I have seen things and been involved in scary life threatening things in mountaineering before that, but nothing quite as momentous or as prolonged. The whole thing went on for days. In the end and another side of the story was that he hadn't died in the fall. He had fallen and landed on a snow bridge in the crevasse and not done any further damage to himself. He then managed to abseil down into the bottom of it, climbs out the other side and then spent three days crawling back and turned up at the base camp. That was a really tough moment when he arrived at the base camp in the middle of the night.</i></p>	<p>Coping with Anxiety</p> <p>Coping with Physical Demands</p> <p>Coping with a stress situation</p> <p>Self control</p> <p>Ability to suffer</p> <p>Risk assessment</p> <p>Effective decision making</p> <p>COPING WITH STRESS & ANXIETY/ PHYSICAL COPING ABILITY/SAFETY AND SURVIVAL/ KNOWING ONESELF</p>	<p>Combatting worry about others</p> <p>Ability to suffer</p> <p>Combatting mental drainage</p> <p>Physical fitness</p>

Table 6.12 Example 2 of emergent key codes, concepts and categories from A/E 21

The detailed examples show how IPA coding feeds into emerging concepts and categories and contributes to the re-interpretation, conceptualisation and theoretical framework of the psycho-physical self sufficiency to survive. In providing such a grounded theoretical model of 'psycho-physical self sufficiency' it may enable those who are preparing to undertake adventure / exploration activities in the future, to refer to a more relevant and appropriate conceptual model for guidance. The examples are considered to be extremely meaningful when explaining what mental toughness really is from an adventure/ explorer 'own perspective'. Having evidence from the 'lived experience' provides a more insightful explanation which is true to the 'real' experience. Adventure literature is littered with autobiographical accounts of personal experiences which demonstrate what may be considered as mental toughness, yet the authors somehow refuse to use the term directly or refer to synonymous terminology such as resilience, determination, mind over matter or mental strength (Bonnington, 1981; Fiennes, 1983, 1993; Fowler, 1995; Holgate, 1994; Priest, 1990, 1999; Priest and Gass, 1997; Ryan, 1995; Simpson, 1988, 1993; Stroud, 1993; Venables, 1996, 2003). In many instances the authors discuss experiences related to concepts and categories outlined within the emergent theoretical model as important psychological characteristics, without making any conceptual relationships linking such important categories. The emergent-grounded theory of the 'psycho-physical self sufficiency to survive' required by adventurers and explorers to achieve success and stay alive in adverse conditions, encapsulates a complex integration of mental and physical components. The value of the phenomenological method has permitted the researcher to become the 'research tool' for exploration into the meaning of these concepts and categories. Each individual interpretation has personal meaning attached to it and mental toughness within

adventure /exploration to one person may well mean something, but to the next person it may well mean something else.

The formation of such an abstract theoretical concept provides deeper level of understanding and meaning to what may be previously considered as mental toughness within adventure/ exploration environments. The phenomenological approach provides data and emergent findings that are contextually specific for adventure/ exploration. There are situation specific demands that shape individual experience and these in turn shape personal perceptions of what is mental toughness within that domain. It is with caution that such contextual theoretical explanation be generalised to wider social contexts. Phenomenological inquiry considers contextual variation of demands and one difference between the previous sample and elite sporting situations is the element of competition and the presence of a direct opponent. The complex nature of mental toughness will now be discussed from within the lived experience of elite coaches.

6.3 Elite Coach Sample- 'Emergent Grounded Theory'

The purpose of this section is to discuss the results and findings of the elite coach sample with emphasis on the phenomenological approach to providing a re-interpretation of mental toughness, and also to provide evidence to how the findings contributed to the conceptualisation of a grounded theory model.

The purposeful sample interviewed for the study was extremely experienced. Over 90% had attended one or more Olympic / Commonwealth Games or a World / European Championships and over 90% of the sample had coached a medallist at major events. Therefore, the sample was considered suitably knowledgeable to provide meaningful interpretation of mental toughness.

In order to discuss the emergent theory of this sample reference will be made to Figure 5.3 which provides a detailed outline of the dominant emergent concept and category formation. Six major categories emerged with each one being supported by a conceptual network which included at least one substantive concept (see Appendix B, Volume 1 for an indication of individual concept/ category substantiation). Table 6.13 outlines the major emergent concepts and categories within the model with detail of the supporting key codes. The conceptual and theoretical development for this sample was identical to the processes that formed the previous theoretical model for the Adventure sample.

Central to the theory is that 'medal winning psycho- physical ability' involves effective mental application specifically applied within the event environment when pressure is at its highest. It also acknowledges the importance of the training environment and wider situational demands that elite sport places upon the performer. The emergent theory almost echo's that of the athlete sample, with only slight differences in aspects of motivation and issues of self control. The emergent codes, concepts and categories which emerged resulted in only subtle differences in substantive supporting data.

Elite Coaches perceive that 'motivation and commitment' are essential to mental toughness and specifically incredibly high levels of dedication. Effective mental application and the ability to use such psychological skills within the event environment were viewed as vital components of mental toughness as they allow athletes to deal with the 'event pressure'. Many different responses were identified that need to be dealt with, such as dealing with the stress and anxiety, high emotions, handling mistakes and setbacks, and being able to maintain focus within a highly pressurized sporting environment that is full of potential distractions.

Emergent Category ATHLETES	Substantive Concepts	Number of supporting key codes	Emergent Category COACHES	Substantive Concepts	No: of supporting key codes
Dealing with Event Pressure	Absolute Focus/ Dealing with Distractions/ Dealing with Mistakes & Setbacks	7	Dealing with Event Pressure	Absolute Focus/ Dealing with Mistakes / Dealing with Setbacks Dealing with stress & Anxiety/ /Handling Pressure/	9
Effective Mental Application	Anxiety Control / Absolute Focus	5	Effective Mental Application	Absolute Focus	3
Self Confidence and Belief	Self Confidence	2	Self Confidence and Belief	Self Confidence Self Control	3
Self Control & Discipline	Self Control	4	X	X	X
Commitment and Determination	Determination	3	Motivation & Commitment	Dedication and Commitment	2
Training and Situational Toughness	Situational Issues	1	Training and Situational Demands	Situational Demands	3
Physical Coping Ability	Physical Coping Ability	2	Physical Coping Ability	Physical Fitness Physical Coping Ability	2

Table 6.13 Major emergent categories, substantive concepts and supporting key codes between the Elite Athlete (n=37) and Elite Coach (n=33) samples

In order to demonstrate such mental toughness coaches perceive that high levels of self confidence and self belief are required and this was a heavily substantiated category. Coaches also recognised mental toughness is related to training and wider situational areas of performance. Finally, mental toughness is perceived to have a physical link in that being able to cope physically requires not only a high level of physical fitness but a psychological toughness which compliments it when athletes suffer pain and discomfort. The extremely high intensity training programmes and lifestyle demands elite athletes are subject to require such qualities in abundance.

Motivation and Commitment

The emergent category combined two important concepts 'motivation and desire' and 'dedication and commitment'. Table 6.14 shows the conceptual breakdown and key codes with gender responses.

EMERGENT CONCEPT	KEY CODE POINTS	SOURCE OF DATA - INTERVIEW
Dedication and Commitment	Dedication Commitment Self Discipline	4,6,8, 6,8,17,27,30,32 4,27,30,32
Motivation and Desire	Self Motivation Drive and Desire Having the incentive Determined nature Wanting it badly enough Will to win Independent & responsible Staying motivated	4,8 27,31 20 2,4,8,10,12,13,17,19,20,24,28,30,31 4,13 4,10,13,23 3,4,5,8,10,12,14,22,23,28 20

Table 6. 14 The conceptual support for Motivation and Commitment in the Elite Coach sample. Females in bold within source of data /Interview column

Coaches place different importance to selective emergent concepts as some are more substantive and meaningful than others such as a determined nature, being independent and responsible and being committed. Findings support Gould *et al.* (2002), who reported elite coaches also echoed such factors were crucial to what mental toughness is about. Such evidence can be considered in the following examples which offer IPA to compliment the emergent data (Table 6.15).

Direct Interview Transcript Quotation	IPA Interpretation	Supporting concept / CATEGORY convergence
<i>But it would certainly improve their game more if they had a 'die hard' attitude and took more responsibility and commitment to it. Elite Coach 27- Hockey</i>	A perception that athletes lack important mental aspects to their game and this is linked to Responsibility and Commitment which are regarded as essential	Dedication / Commitment Dedication & Commitment Handling pressure Gaining the mental edge Motivation & desire
<i>As you get more competition oriented you get more and more focused, more single minded and determined...I mean incredible self-determination, and they usually have high levels of self-dependency. Elite Coach 8 – Sailing</i>	Single minded/Determined /Self Determination/Self Dependent /Being focused- The nearer a competitive event the more intense the mental approach inwardly. Athletes tend to become self dependent and rely less on others for support.	Motivation & desire Extending oneself beyond the comfort zone Self Confidence
<i>I think they just want to win badly, more than the other people; they are more prepared to push themselves that much more in training and in the competition, I think that is the bottom line. They want to win more than the others. Elite Coach 4 – Swimming</i>	Want it badly enough-more than others. A perception that MT athletes are willing to extend themselves more than others – They want to win more-than others and are prepared to push in training	MOTIVATION & COMMITMENT Self Confidence Motivation and desire

<i>I think if you are determined enough and you think you can do it then you can do it. Elite Coach 17- Swimming</i>	Determined linked with Self Confidence	Motivation and desire <u>CATEGORY CONVERGENCE</u>
<i>I suppose be resilient and tough enough to stick at it through thick and thin. I suppose that is really why I stick at it because I am determined to show that I can do it. Elite Coach 31 – Equestrian - female</i>	Being resilient/ Having stickability /Being determined A link with dealing with adversity	EFFECTIVE MENTAL APPLICATION/ DEALING WITH EVENT PRESSURE/ SELF CONFIDENCE & BELIEF TRAINING & SITUATIONAL DEMANDS

Table 6.15 Examples of conceptualisation of Motivation and Commitment within the Elite Coach Sample

It is evident that from the findings coaches perceive having the motivation and desire coupled with commitment and dedication to be major characteristics that contribute to mental toughness. They connect people who ‘want it badly enough’ (EC4), have a ‘will to win’(EC4), demonstrate intense ‘determination’ to ‘stick at it’(EC31) and who are both ‘independent and responsible’ (EC27) as mentally tough. Having the commitment and determination to continually strive to be one of the very best athletes in the world is linked with desire to achieve personal expectations and the expectations of coaches.

Determination may also be displayed in order to prove to others that you can do it as opposed to proving it to oneself, indicating there may be different reasons for showing determination, ‘*I suppose that is really why I stick at it because I am determined to show that I can do it* (Elite Coach 31).

However, coaches were not explicit and did not offer any indication as to the consistency of such characteristics over time which is indicative of more dispositional behaviour. Arguably, all elite performers have a fairly high degree of motivation and commitment but what distinguishes those who are truly mentally tough compared to who lack it remains questionable.

Maybe independence and responsibility that attracted numerous responses

(30% of total) is the key characteristic that drives mental toughness in that people are able to 'look after themselves' and survive alone in a similar way to adventurers and explorers, and this is how mental toughness is largely developed.

On a critical note, many coaches did not perceive aspects of motivation and commitment to be that important and findings did not support the themes of 'drive' or 'perfectionism' which figured prominently within the Gould *et al.* (2002) study.

Partial support is linked to Middleton *et al.* (2004) for the recognition that 'goal commitment' is centrally related to mental toughness. Overall, motivation and commitment, together with intense determination and a sense of independence were perceived to be crucial aspects of mental toughness. These are very important determinants of training and competition behaviour, as indicated by one swimming coach when considering what constitutes a mentally tough athlete:

They are more prepared to push themselves that much more in training and in the competition, I think that is the bottom line. They want to win more than the others. Elite Coach 4 –Swimming

Self Confidence and Belief

This category was central to what coaches perceived mental toughness was all about as it was heavily substantiated. The findings were weighted in favour of 'self confidence' compared to 'self belief' which was surprisingly shallow given the major importance place on self belief within previous elite athlete research (Fourie and Potgieter; 2001; Gould *et al.*, 2002; Jones *et al.*, 2002; Thelwell *et al.*, 2003; Middleton *et al.*,2004; Bull *et al.*, 2005).

Self confidence was related to mental toughness by over 72% (24/33) elite coaches, self belief 20% (7/33) and self control 36% (12/33). Coaches linked different types of confidence to mental toughness such as winning confidence, technical confidence, confidence in the training programme, and both samples considered the most

substantive theme as 'self confidence in ones ability' to perform at the highest level.

Self control, control of ego and emotional control were also perceived important by coaches.

Self confidence was viewed as crucial as the following reasons outline in Table 6 .16 below, and it had strong conceptual relationships with other major categories.

Direct Interview Quotation/ Source	IPA Interpretation	Supporting concept / CATEGORY convergence
<p><i>That if you are confident you are able to succeed and you are able to come back up, even having suffered defeat or you think that although I am injured I can still win.</i></p> <p><i>I think that confidence is what leads to the quality that makes somebody feel invincible and gives him or her that impression that they can go out and win</i> Elite Coach 32 – Cycling</p>	<p>The coach is explicit about how confidence not only allows a greater chance of success but also enables people to recover from failure quicker. Additionally, being confident may allow people carrying injury to have some belief that winning is still possible.</p> <p>The coach believes that a person's perception of their ability is amplified and absent of negatives providing utmost self belief</p>	<p>Concepts –</p> <p>Self confidence Self belief Dealing with setbacks (injury) Gaining the Mental Edge (feeling invincible)</p> <p>Category convergence:</p> <p>SELF CONFIDENCE & BELIEF/ DEALING WITH EVENT PRESSURE/ PHYSICAL COPING ABILITY</p>
<p><i>I think part of resilience is if you know yourself well as a person and you have a strong sense of identity, and you know that you can cope, you tend to have the self-confidence within you. It all comes from knowing yourself, recognizing situations and knowing that you have been there before. Then, being able to react, knowing that you can react appropriately and cope with it all effectively.</i> Elite Coach 14 -Field Hockey</p>	<p>The coach emphasises the important link to knowing oneself (a sense of identity). Having confidence allows people to cope better and recognise situations better due to having benefited from past experience</p> <p>It implies that having done it before it will guarantee one can cope and deal with future situations effectively</p>	<p>Concepts –</p> <p>Mental resilience Self Confidence Previous experience Dealing with stress and anxiety Effective use of mental skills</p> <p>Category convergence:</p> <p>SELF CONFIDENCE & BELIEF / DEALING WITH EVENT PRESSURE/ EFFECTIVE MENTAL APPLICATION</p>
<p><i>He applies himself more in terms of having self confidence without going over the top, without being sloppy without being casual in his play. He has an air of cockiness but not to not enough to set himself up to be shot down.</i> Elite Coach 1 – Basketball</p>	<p>Self confidence is related to direct application and is able to effectively self regulate without losing control or becoming complacent.</p>	<p>Concepts –</p> <p>Self Confidence Effective use of mental skills</p> <p>Category convergence:</p> <p>SELF CONFIDENCE & BELIEF / EFFECTIVE MENTAL APPLICATION</p>

<i>I think it provides what we class as mental toughness, which means that somebody seems to be able to cast everything aside, may well be their ability to concentrate on their strengths, to evaluate the situation, to do some level of cognitive restructuring of a performance they have done and actually be able to evaluate that in a way that gives them the confidence.</i> Elite Athlete 24 – Cycling	The coach is explicit in the sense that the text directly links self confidence with the ability to effectively use mental skills (attention control, dealing with distractions, cognitive restructuring and evaluation skills). Being able to use such skills successfully provides self confidence. The coach does not fully explain if self confidence allows the use of such skills to be performed better or that using the skills leads to becoming more confident.	Concepts – Self Confidence Effective use of mental skills Category convergence: SELF CONFIDENCE & BELIEF / EFFECTIVE MENTAL APPLICATION
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Table 6.16 Selective IPA analysis and conceptual convergence of Self Confidence data within the Elite Coach Sample.

Having a high perception of ones ability was identified as crucial to mental toughness and IP analysis supports such findings. It is evident that the category underpins 'effective mental application', 'the ability to handle pressure' and 'dealing with event pressure'. Selective quotations reinforce such a contention:

He knows how good he is and goes out and shows it (EC3); Knowing you are one of the best really helps when it gets tough out there (EC12); You have got to have confidence in yourself and your ability in the long term (EC16); You go through a phase where you seem to be jumping clear rounds and clear rounds, then you are really very confident and it is actually these are the better performances (EC31); Confidence, because they are confident about what they are going to do and they think they can do it (EC17)

However, self confidence to others is also a somewhat nebulous term which is interpreted in different ways suggesting that people interpret the meaning and value of self confidence differently and these were considered in the previous results chapter. An interesting point was offered by a cycling coach implying that self confidence is merely situation and skill specific much like self efficacy (task related).

You see some people who are just so confident on a bike and they are unbelievably skilful people at their craft and then you take them off their bike and they fall to pieces; they just fall apart. They can't talk to people; they can't live or exist in different environments (Elite Coach 33- Cycling)

In this way confidence would be directly related to one's perception of ability and competence to complete a required task and in any other situation where such perceptions are low then confidence would be negatively affected.

Coach perceptions of self belief provided similar meanings to self confidence and it seems that terms were sometimes used synonymously.

Examples of self belief statements which emerged included:

I think he has self-belief – he knows he can do it. He has proved to himself and to others that he can do it at the top level. (EC1); She believed she was the best, she believed she had taken all the toughness stuff on board as it were, and she was able to cope with it(EC20); She has so much confidence and self belief in herself that she is thinking 'well surely I can get that medal' (EC17).

IP Analysis provides meaningful insight into the possible differences between self confidence and self belief. Self confidence related to ability is usually linked to performance and the process of delivering a performance e.g. I'm confident I can do well', whereas self belief as in the above examples is largely concerned with definitive outcomes e.g. proved ability, winning a medal, being the best.

Although self confidence may be derived from different sources it is the important sense of self confidence and self belief that is perceived to be most strongly related to mental toughness. In agreement with both Jones *et al.* (2002) and Middleton *et al.* (2004), this research supports the contention that 'having the unshakeable belief in your ability to succeed and achieve reaching one's specific goal' is central to what mental toughness means to people involved in elite sport.

Effective Mental Application

The category emerged from 'effective use of mental skills' and 'absolute focus', the latter being far the most substantive theme. Detailed results have previously been presented in chapter five showing the construction of the emergent category. The category emerged due the perceived importance of mental skills in determining how

athletes handle event pressure with particular emphasis on maintaining absolute focus and dealing with external distractions. It also emerged due to coaches identifying the need for athletes to endure difficult training regimes in combating physical adversity and the need to cope with wider situational and lifestyle demands. Such links provided evidence for conceptual and category convergence within the grounded theory model.

The following examples provide evidence of such emergent relationships.

Direct Interview Quotation/ Source	IPA Interpretation	Supporting concept / CATEGORY convergence
<i>Those who are toughest mentally are able to keep themselves focused on their training despite outside distractions. They are dedicated and committed to being the best</i> Elite coach 13 – Badminton	Being focused on developing skills and abilities whilst avoiding potential incentives from outside requires discipline over a period of time. It implies those that do not are not as tough mentally.	Concept Absolute focus / Dealing with external distractions/Training toughness/ situational toughness
<i>Those who can block out the pain whilst training and get on with it, without making a fuss or complaining. They all do the same but some just accept it as what's needed.</i> Elite Coach 23 - Swimming	Mental skills that require pain tolerance and an ability to endure high intensity work over time are linked with MT. Such behaviour is perceived as being positive and indicative of what a tough athlete is about.	Concept Coping with pain / Training toughness
<i>Being an elite athlete in our discipline requires athletes to be resilient because they are away from home for long periods of time. That is difficult when they have families and loved ones. They need to block it out and just perform which some are able to do.</i> Elite Coach 32 - Cycling	The implication that mentally tough performers are able to stay focused despite personal losses and potential distractions from home. This implies that they need to be able to adapt to lifestyle demands and some athletes are able to do it, which the coach implies are the tough ones.	Concept Lifestyle demands/ Dealing with external distractions/
<i>People who are able to mentally deal with setbacks and apply themselves are the tough ones. Some athletes respond more positively and get stronger whilst others don't respond at all, they need help in handling a defeat</i> Elite Coach 3 - Rugby	The coach is explicit in that mentally tough performers handle setbacks much more effectively than lesser mentally skilled athletes. They are more independent and responsible, positive and as a result they become mentally stronger.	Concept Dealing with setbacks/ Effective use of mental skills/ Motivation and desire Effective Mental Application/ Dealing with event pressure/ Motivation & commitment Category Convergence: EFFECTIVE MENTAL APPLICATION –

		DEALING WITH EVENT PRESSURE/ TRAINING & SITUATIONAL DEMANDS/ MOTIVATION & COMMITMENT/ SELF CONFIDENCE & BELIEF
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Table 6.17 Conceptual and category convergence of Effective Mental Application

Such conceptual convergence demonstrates that effective mental skills are perceived as important to mental toughness and they are applied in a variety of different situations. The emergence of such a concept / category is hardly surprising given that previous research has also indicated that the application of ‘superior’ mental skills within training and particularly competition itself is what differentiates mentally tough performers to the rest (Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*,2005).

Dealing with Event Pressure

Without doubt, this category emerged as one of the most substantive of all. Reference within discussion will be made to Figure 5.3 which provides detail of the emergent codes and concepts supporting the category. The use of effective mental skills are really only tested fully when having to be applied in a highly pressurized competitive environment.

Handling event pressure is an important aspect of being mentally tough and the following quotations support the emergent concept and link it with other connected themes:

I think the secret is when the pressure is really on, if you can still think and move, then that basically is quite important. My athlete says he knows how to win when he gets to the right stage, maybe because he still can be relaxed enough, and at the same time concentrating to be able to keep thinking about the game. Elite Coach 13- Badminton (handling pressure / use of mental skills)

The coach implies pressure has a negative effect on cognitive functioning and information processing and also that staying relaxed can assist in handling event pressure. Pressure increases for many reasons and these amongst others include the

perceived importance of the event, the perceived consequences of failure, an increase in expectations and the enormity of the event. The Olympic Games provide no bigger stage for a performer as the coach further explains:

Direct Interview Transcript Quotation	IPA Interpretation	Supporting concept / CATEGORY convergence
<i>I definitely believe that is mental toughness, the ability to be strong under pressure. Because the ultimate performance level at the Olympics swimmers feel tremendous pressure. In Atlanta, one thing she said straight after going out under the blocks for 100 metres freestyle was just the size of the crowd, to see 7,000 people watching and that scared her. Such factors have nothing to do with their physical ability but had to do with the way they were going to approach their swim from a mental standpoint. Elite Coach 23-Swimming</i>	<p>The subject was explicit in stating that being 'strong under pressure' was central to mental toughness. Given the level of performance the participant implies that pressure has an emotional or a proprioceptive attachment.</p> <p>Audience size and evaluation are antecedents of stress and these are perceived to create anxiety (fear) in athletes. The coach recognises these purely as mental factors that need to be coped with for the swimmer to perform well.</p>	<p>handling pressure/ emotional control /self control</p> <p>dealing with external distractions (audience)</p> <p>handling event pressure</p> <p>Conceptual Convergence : DEALING WITH EVEN PRESSURE</p> <p>SELF CONFIDENCE / BELIEF</p>

Table 6.18 Conceptual and category convergence of Dealing with Event Pressure / Self Confidence and Belief

Alternatively, event pressure may be down to dealing with external factors outside of personal control, as one coach implied when explaining the 1996 Atlanta Olympic arrangements for athletes preparing to compete in the swimming events:

In Atlanta it was initially fine because the pool and the accommodation were all so close, but the roads! You had to think of that when you are travelling an hour to get to the venue and the driver of the bus didn't even know where you were going. You have got to handle that pressure, you have got to. Elite Coach 17-Swimming (handling pressure / dealing with distractions)

Handling competition pressure at major events such as world championships or the Olympics is prolonged and can last over a week or more particularly if heats are involved and athletes double up in events such as in athletics and swimming; are involved in multiple events such as the pentathlon; play tournament events which requires a series of pool games to reach knockout stages, such as hockey or play pure

knockout as in Badminton when entered for doubles and mixed doubles. The pressure at such events is unparalleled. One coach explains it as:

Direct Interview Transcript Quotation	IPA Interpretation	Supporting key code / concept / CATEGORY convergence
<i>I find you have got to keep it going, at the Commonwealth there are six days of competition so you are involved every other day. She seems to be able to handle it, she certainly handled Perth and the World championships very well, and got through the experience and she handles it better each time she goes.</i> Elite Coach 23 –Swimming (handling pressure/ previous experience)	The coach perceives that tournament pressure for some athletic disciplines is prolonged and cumulative, if the athlete is performing well. The coach is not totally convinced that the athlete has full control over the situation preferring to use the term 'seems to be able' which implies times that the athlete is inconsistent.	handling pressure (over time) previous experience situation demands
	The coach implies that such experiences have a stress inoculating effect on athletes in that with more exposure to the stress stimulus the athlete learns how to deal more effectively with it.	Conceptual Convergence : DEALING WITH EVENT PRESSURE SITUATION TOUGHNESS

Table 6.19 Conceptual and category convergence of Dealing with Event Pressure / Training & Situational Toughness -EC23

The important point being that handling 'big event' pressure is different in terms of scale and level of intensity compared to other less important sporting calendar events, because it requires the ability to sustain the pressure defences over a period of time and deal with potential distractions on a scale matched nowhere else.

Handling pressure is linked to being able to handle adversity and overcome difficult situations such as mistakes and setbacks. Such instances were prominent in the interviews with coaches. Adversity and unforeseen problems create performance anxiety and this provided another related concept in that athletes need the necessary skills to be able to deal with such situations. Every athlete has to deal with such situations and none are immune to them as two coaches explain in Table 6.20.

Direct Interview Transcript Quotation	IPA Interpretation	Supporting concept / CATEGORY relationship
<i>I think it is a very critical factor because people will always lose form in every sport, you will never find anybody who hasn't at some stage. Elite Coach 20- Canoe Slalom</i>	The coach perceives that every athlete requires such coping skills when experiencing a setback and it is only a matter of time before they will need to apply them. Such skills are viewed as prerequisites for mental toughness.	Dealing with setbacks
<i>We know that there are going to be tough times. I think what we have to look at often is when you make an error or a mistake and when you lose games you have to look to see and work out what went wrong or how you could improve it. I think often performing or under performing and making mistakes is important to deal with. We often say to athletes on the field, it's not about the errors you make it's what you do to resurrect and correct the error. That's often what you are looking for. I mean everybody makes mistakes and everybody misses trapped balls. Everybody will shoot wide of the goal but its whether you have actually learnt from that situation and you have identified what's needed to make that better. Players have to show that it is about coming back from a set back, to be able to improve yourself. Elite Coach 29 - Field Hockey</i>	<p>Mistakes and setbacks require a cognitive process and have to result in a positive learning effect.</p> <p>The coach feels it is important to experience mistakes but address them from a learning perspective so they are not wasted in terms of providing information which will improve the future performance. If the coach observes such behaviour then they link it with mental toughness in that the athlete is determined to improve as a result of the setback or mistake.</p> <p>The coach does not imply that those athletes who make less mistakes or have fewer setbacks are the true mentally tough performers.</p>	<p>Dealing with setbacks</p> <p>Effective use of mental skills</p> <p>Handling pressure</p> <p>Conceptual Convergence:</p> <p>EFFECTIVE MENTAL APPLICATION</p> <p>DEALING WITH EVENT PRESSURE</p>

Table 6.20 Conceptual and category convergence of Dealing with Event Pressure / Effective Mental Application

The hockey coach emphasises learning from the experience and it seems mentally tough athletes demonstrate such qualities. The implication being that other lesser skilled athletes do not deal with such experiences so effectively. The quote also explicitly states that the coach seeks out such qualities when looking for mentally tough athletes within her squad, which implies selection criteria based on such qualities.

The coach data offers different examples of what setbacks and mistakes comprise of and setbacks can vary from serious loss of form, injury, de-selection from squads and

personal issues which have significant impact on a person's performance as in the following example:

He has just had a knock back from his girlfriend; which is mental toughness I suppose. His girl friend said that is it, they had just bought a house, had it a year and she said that is it
Elite Coach 6 -lifestyle demands / situation issues

Mistakes are more immediate and short term but can possibly transfer into a setback if the consequences are profound and significant. Coaches tended to observe athlete reactions to setbacks and mistakes in terms of whether they were positive and progressive in having a learning effect. The data offers future potential for researchers studying anxiety and stress might find it useful to employ phenomenological inquiry to explore the processes which athletes apply in order to 'deal with setbacks' given we now know that the 'medal winners' do it better than the rest.

The emergent data within the category provided some very useful links between concepts, it demonstrated a more focused understanding to exactly which mental skills are related to mental toughness and mapped out the inter-related concepts which form what coaches perceive to be the factors most associated with mental toughness in the pressurized competitive event environment.

Training and Situational Demands / Physical Coping Ability

Training and situational demands as a category was strongly linked to the category 'physical coping ability' due to mental toughness being associated with training methods, tough training /competitive and painful training programmes. The following selective quotations support such beliefs in Table 6.21.

Direct Interview Transcript Quotation	IPA Interpretation	Supporting key code / concept / CATEGORY relationship
<i>I think that it's part of the training regime and they do it without realising that what you are trying to do is toughen them up. I will say to them, 'you have got to be tough', I don't think they really understand fully what you mean, when they are whimping out in training I say 'you have got to be tough', what they think is to be physically tough not mentally tough. Elite Coach 17 – Swimming</i>	The coach perceives mental toughness to be a by product of the training regime. Implying that athletes are somewhat unaware of the fact that they are being 'toughened up' through such a process. The coach is implicit in the use of the term 'tough' and athletes interpret it differently. Greater clarification is required in terms of communication.	training methods tough training physical toughness Training toughness TRAINING AND SITUATION DEMANDS PHYSICAL COPING ABILITY
<i>From the mental toughness point of view, one has to display that they had to change their lifestyle off the water, mental toughness to actually get down and do the physical programme and toughen up off the water in terms of self discipline and control and having a professional approach. Elite Coach 8 – Sailing</i>	<p>The coach is aware that being mentally tough is required away from the competitive venue within lifestyle management.</p> <p>Being independent and responsible, having self discipline off the water is important to being mentally tough</p>	training methods being independent and responsible physical coping ability self control lifestyle demands Training toughness Motivation & desire Conceptual convergence: MOTIVATION AND COMMITMENT/ TRAINING AND SITUATION DEMANDS/ PHYSICAL COPING ABILITY

Table 6.21 Conceptual and category convergence of Motivation and Commitment, Training and Situation demands and Physical Coping Ability

The first coach (EC17) implies that the athletes do not fully understand that the physical training programme is in part responsible for developing mental toughness in people.

The second coach (EC8) offers a broader perspective explicitly stating that athletes need to be tough whilst performing, but also in their preparation programme and the two are strongly linked. Coaches also perceived being an elite athlete involves a physically demanding lifestyle that requires many situational problems to be resolved and a travelling lifestyle that creates problems for athletes such as being away from

home, illness and potential injury, therefore being able to adapt to the environment is important.

The strongest link was the relationship between being physically fit and the ability to cope with physical discomfort in training. Table 6.22 shows the conceptual breakdown of the categories 'training and situational demands' and 'coping with physical discomfort' together with subject contributions. Physical coping ability is linked to pain, discomfort, exhaustion and fatigue and it is noticeable female coaches do not contribute to that concept (or situational / lifestyle demands). Although not a heavily substantive concept it is one in which researchers might well explore in the future as it was identified by female elite athletes as important to mental toughness. If female coaches do not perceive pain tolerance to be part of mental toughness could this ultimately influence their coaching behaviours in what targets they set their athletes? Questions need to be asked why female coaches do not perceive coping with discomfort as important to mental toughness. The female sample contained coaches from hockey (2), swimming (2), and slalom canoeing, boccia, sailing and equestrian disciplines. Such data is somewhat surprising given that top level elite sport demands extremely intense training programmes and competitive situations which require the ability to effectively cope with physical discomfort, fatigue and pain.

However, two male coaches explained it quite clearly:

I think it comes down to how hard you work in the pool, that itself makes you mentally tough.
Elite Coach 17 –Swimming (training toughness)

I think you will know them from the training, because they will show the toughness in training. Elite Coach 4 –Swimming (training toughness)

EMERGENT CONCEPT	KEY CODE POINTS	INTERVIEW SOURCE
Physical Fitness	Physical toughness Extreme fitness Natural toughness	21 4,8,13,10,24,32 11
Physical Coping Ability	Coping with Pain Coping with Discomfort Perform when exhausted Dealing with fatigue	12,16,23,27 8,10,23,24 8,10 8,10,13,
Training Situations	Being away from home Training methods Smart training Tough training Training culture Competitive training environment Training with the best	13,32 1,5,6,14,15,17,19,21,25 1,4,13,14,20 4,10,15,16,19,23,24,30 1,4,19 4,8,17,20,27,32 8,17,23,
Situational Demands	Discipline Requirements Situation issues	2,4,6,8,12,13,15,17,20,23 2,8,10,19,20,28
Lifestyle Management	Lifestyle demands Adaptation to environment	1,6,10,23,32 9,10,20,32

Table 6. 22 The conceptual breakdown of the categories 'Training and Situational Demands' and 'Physical Coping Ability'. Substantiated concepts in bold (middle column)- female responses in bold (right column)

Overall, both categories were considered as important by coaches in attempting to explain how mental toughness is perceived. Both categories are largely neglected by popular non-scientific mental toughness literature (Bull *et al.*, 1996; Goldberg, 1997) and as a result deserve more consideration and further research attention. Only recently has Middleton *et al.* (2004) identified the link with dealing with adversity to be significant in their emergent concept of 'perseverance' which requires athletes to remain constant to a purpose, idea, or task in the face of obstacles , discouragement or adversity. However, the link with physical demands and training environments remains tenuous.

This section has considered the data from the elite coach sample and attempted to demonstrate evidence that interpretative phenomenological analysis contributed to the emergent data and provided purpose for the meaningful conceptualisation of concepts and categories to the contribution to the emergent grounded theory framework. The findings provide evidence that such data is well grounded within each of the stages of the theoretical model.

6.4 Elite Athlete sample 'Emergent Grounded Theory'

The purpose of this section is to discuss the results and findings of the elite athlete sample with emphasis on the phenomenological approach to the re-interpretation and conceptualisation of mental toughness, and also to provide evidence to how the findings contributed to the provision of a grounded theoretical model.

The purposive sample interviewed for the study were very experienced and over 98% had attended at one or more Olympic / Commonwealth Games or a World / European Championships. Moreover, over 86% (32/37) of the sample had achieved one or more medals at major events. As a result, it was considered that the sample was suitably knowledgeable of what it takes (in terms of mental toughness) to medal at a major championship as opposed to contending for them.

When discussing the emergent-grounded theory reference will be made to Figures 5.7. The previous results in Chapter 5 highlighted in detail the emergent key code, concept and category formation and provided meaningful findings in support. Discussion will now focus on the conceptualisation of themes and additional phenomenological meaning inherent in the participant's perceptions of mental toughness. Table 6.23 details the theoretical structure of the elite athlete grounded theory, with it possessing seven major categories and substantive supporting concepts; each category having at least one substantive supporting concept.

Emergent Category	Substantive Concepts	Number of supporting key codes
Dealing with Event Pressure	Absolute Focus/ Dealing with Distractions/ Dealing with Mistakes & Setbacks	8
Effective Mental Application	Anxiety Control / Absolute Focus	5
Self Confidence and Belief	Self Confidence & Self Belief	2
Self Control & Discipline	Self Control	3
Commitment and Determination	Determination	3
Training and Situational Toughness	Situational Issues	1
Physical Coping Ability	Physical Coping Ability	2

Table 6.23 Categories, substantive concepts and key codes within the Elite Athlete sample.

A striking feature of the elite athlete data was the magnitude of the perceptions offered. Super ordinate themes were rich and meaningful in descriptive content which supported a well grounded framework allowing a solid conceptual model to emerge. Central to the theory is that 'medal winning psycho- physical ability' involves effective mental application and specific application within the competitive environment when pressure is at its highest. It also acknowledges the importance of the training environment and wider situational demands that elite sport places upon the performer. It specifically requires athletes to demonstrate high levels of determination, self-confidence and belief and have superior self-regulatory skills such as absolute focus, and the need to deal effectively with mistakes and setbacks in the face of adversity. In the case of elite athletes this usually means performing under extreme event pressure and self-control and discipline is a fundamental necessity for successful outcomes to be achieved. Furthermore, elite athletes perceive that physical fitness and physically coping with what it takes to be an elite athlete, is mentally demanding. Discussion will now focus on each of the major emergent categories and

consider the phenomenological meaning in support of the conceptualisation of mental toughness by elite athletes.

Dealing with Event Pressure

In agreement with elite coaches, elite athletes also perceive becoming a champion ultimately requires dealing with event pressure. This is not only in the training phase, but more importantly the externally driven pressure of intense event competition and the ability to effectively deal with more internal responses to pressure such as event anxiety. Elite athletes perceive mental toughness to be associated with process and outcome dimensions (see Table 6.24). These being the ability to apply absolute focus whilst performing and the ability to deal effectively with distractions (process), and to be able to deal with mistakes and setbacks (outcome related).

EMERGENT CONCEPT	EMERGENT KEY CODE	INTERVIEW SOURCE
Dealing with Mistakes and Setbacks	Dealing with mistakes Dealing with setbacks cont, Dealing with failure Coping with adversity Proving people wrong	1,7,8,9,12,15,16,18,21,22,23,26,27,29,32,34, 1,2,4,7,8,9,11,12,14,15,16,18,19,21,22,23, 24,25,26,27,29,31,34,35,37 7,20,36, 7,20,25,36 2,6,12,19,29,32,34
Absolute Focus	Being Focused Ability to focus Mental parking	2,7,14,30,33,35 2,3,4,8,10,13,15,16,17,19,21,29,30,34,35 8,12
Dealing with Distractions	Dealing with distractions Blocking out	2,3,4,6,7,8,15,20,21,23,25,26,28,29,30,32,34,35,36 1,3,4,6,7,14,15,20,26,28,30,35,36

Table 6.24 Emergent major concepts related to the 'Dealing with Event Pressure' category for the Elite Athlete sample – Females in bold

Major concepts supporting the category are recognised in previous work 'bouncing back from performance setbacks', 'remaining fully focused in competition' and 'remaining focused in the face of personal life distractions' (Jones *et al.*, 2002; and Middleton *et al.*, 2004).

The findings show that by having previous experiences of losing, mental toughness is thought to be developed as consequences of previous failure. Elite athletes who eventually medal at major tournaments make sure negative experiences are important learning experiences so future events are handled more effectively.

This substantive category emerged from thematic connections from no less than eight major concepts. A striking feature of the complexity of the conceptual make up of the category is that dealing with event pressure has multiple interpretations associated with it from how athletes perceive mental toughness. Although these variations can be consumed under eight umbrella concept titles individual interpretations differ considerably. Whilst some athletes (EA 2,3,7, 8, and 28) may strongly emphasise anxiety control, other athletes may well emphasise different concepts such dealing with setbacks and mistakes as major features of what they perceive as mental toughness (EA1 ,12,15, 32 and 34). This is the main reason why a phenomenological approach was employed; to explore different interpretations of meaning attached to what athletes think mental toughness is from their own lived experience.

Given the eight major concept headings seven have multiple supporting key code themes which offer variations of the theme with distinct features attached to them. Such a complex conceptual network of thematic interpretation only serves to reinforce that mental toughness requires investigation from the naturalistic paradigm and that it is acknowledged that it assumes multiple reality in how people perceive the phenomenon.

In the previous chapter (5) detailed results were discussed in the concept 'dealing with setbacks'. The following examples in Table 6.25 provide evidence of concept and category convergence of 'dealing with event pressure' in support of the emergent grounded theory.

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / transformation into concept – CATEGORY convergence
<p><i>You can't play well all the time, sometimes you just need to knuckle down, stay tough and win when you are playing badly and believe in yourself</i></p> <p>Elite Athlete 26 – Badminton</p>	<p>Explicit recognition that form fluctuates and mistakes are part and parcel of the game. Being tough requires a resilience to work hard when under-performing and achieve a result when not playing well. Mental toughness is not all about winning when playing well and the athlete is implicit when inferring that mental toughness is just as important when under-performing as it really shows ones true character.</p> <p>dealing with mistakes / winning mentality/ self belief</p> <p>DEALING WITH EVENT PRESSURE / SELF CONFIDENCE AND BELIEF</p>
<p><i>Missing out on an Olympic medal by six tenths of a second in the year 2000 was a tough blow to take, and that definitely contributed to me missing the world championship team the following year. I didn't really know where my head was, that was definitely responsible for the poor mental preparation that year. The Olympics, is black and white, if you're aiming for the medal and you don't get it, then you've missed out and that's it.</i></p>	<p>The athlete expresses the meaning attached to a severe setback and the extended time of psychological recovery. It far overshadows physical recovery time and when the negative consequence of a major event (Olympic) it is chronic fallout. Confusion and inferred depression were prominent in terms of future career choice and intent. Acceptance of lack of mental skills was offered and the athlete underperformed for a long while afterwards without any purposeful direction.</p>
<p><i>I didn't know whether to call it a day in my career and move on and do other things with my life. It took a lot of time to try and figure out what was going on and what the deal was. I don't think I dealt with it very well. I kind of ran away from the sport for about 5 or 6 months and then coasted for a little while. It was a good example of me not being mentally tough and not jumping back up from a defeat. It's not easy to be mentally tough following a defeat like what I went through.</i></p> <p>Elite Athlete 25- Swimming</p>	<p>The quotation provides evidence that athletes are not consistent in their mental toughness and a severe setback is capable of testing ones resilience to pressure. The setback created confusion and lack of focus on current performance and the athlete fully accepted he did not cope with it very well.</p> <p>The final comment alludes to the fact that being mentally tough in certain situations is not an easy task which what many people outside of elite athlete circles expect from Olympic athletes. From the world 'within' it is extremely tough to deal with and sometimes athletes are human and fail to cope with pressure. Recovering from a severe setback which imposes a deep sense of failure and disappointment is extremely difficult. From an empathic perspective one really needs to have suffered such an experience to fully comprehend and understand such emotional turmoil and how to best respond to it.</p> <p>Mental preparation / dealing with setbacks / coping with adversity</p> <p>DEALING WITH EVENT PRESSURE/ EFFECTIVE MENTAL APPLICATION</p>

Table 6.25 Conceptual and category convergence of Dealing with Event Pressure and Effective Mental Application within the Elite Athlete Sample

Recovery from setbacks and mistakes are considered by some to be fundamental to what mental toughness is about (Goldberg, 1997; Jones *et al.*, 2002). Middleton *et al.* (2004) prefer to use the term 'perseverance' to describe how athletes persist in or

remain constant to a purpose, idea, or task in the face of obstacles, discouragement or adversity. However, previous work does not consider the subtle difference between a mistake and a setback and generally treat both issues as fairly global consequences of performance. The researcher considers the more severe setbacks as a true indicator of what requires mental toughness, and is in agreement with Middleton *et al.* (2004), in that only when significant adversity is confronted is mental toughness displayed with any depth of intensity. Suffering a life threatening illness is considered severe adversity and the following example provides evidence and evaluation of such an experience (Table 6.26).

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / transformation into concept data and CATEGORY convergence
<p><i>I had a real set back in that I was very sick and I got through that and got medals at the Commonwealth Games. I'm convinced that what I went through back then definitely made me tougher. Some of the pain I went through when I was really ill was so much more painful than anything I experience in swimming. I had these (towards the end) really horrible stomach pains which made me vomit and that was so much worse than anything you have to endure in a swimming pool. Training pain is not the same thing, it is easier, and so, I think that definitely made me tougher.</i></p> <p>Elite Athlete 37-Swimming</p>	<p>The athlete admits that as a result of a major life threatening illness his mental toughness was developed. Swimming as an elite athlete is difficult and hard work but it has to be placed in perspective and when one experience true pain on a different scale it places training pain in some perspective.</p> <p>From a personal perspective knowing and being aware of what levels of pain can be real for people made this athlete's perception of what is mentally tough so much more sensitive and balanced. Setbacks are not just performance related but linked to many different issues, which tends not to be widely acknowledged. They need to be considered from a personal perspective and treated as such.</p> <p>dealing with set backs/ previous experience/ physical coping ability/ training and situational issues</p> <p>DEALING WITH EVENT PRESSURE/ PHYSICAL COPING ABILITY</p>

Table 6.26 Conceptual and category convergence of Dealing with Event Pressure and Physical Coping Ability within the Elite Athlete Sample

The athlete's personal situation places training toughness in perspective and subjective pain scales are not really fully extended in sports training compared to what is capable of being experienced in other real life situations. What is perceived to be somewhat painful within an athletic context is subjectively re-interpreted as a

result of being subjected to a more excruciating painful experience. In many ways it makes training pain to be more tolerable as a result.

Some setbacks are cumulative and arguably require a higher degree of mental toughness as they may erode ones self confidence and belief if the athlete becomes negatively affected by them. In the following example an athlete explains their perception of being mentally tough following a sequence of major setbacks (Table 6.27).

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / transformation into concept data and CATEGORY convergence
<p><i>I lost 10 grand prix finals before I won one! The 11th one was the first Grand Prix final I won, excluding the Europeans Men's Doubles and National Titles. I analysed them all and realized that I only really lost 2 out the 10, as the rest of the time I had been beaten by better people or my partners hadn't played up to scratch. There were one or two occasions in that I didn't perform to the best of my ability. I had been beaten by Olympic champions and world champions and learnt from it. I believed I was good enough to win eventually and did. I won a number of major championships after that and an Olympic medal.</i></p> <p>Elite Athlete 1-Badminton</p>	<p>The athlete perceives that he was mentally tough despite losing. He rationalised and attributed the defeats externally based on the fact he lost to superb world champions who were superior athletes at the time, or his partners were to blame. Internal attributions (personal form) were also accepted as reasons for failure. He accepted that mental toughness is a characteristic that is slowly developed over time not as immediate mental skill that is easily available to athletes. Acquiring mental toughness was perceived as a meaningful learning experience that athletes should develop through their failures as well as their successes, as it is highly likely they will continue to fail until they become world or Olympic champions!</p> <p>dealing with setbacks/ previous experience/ self belief</p> <p>DEALING WITH EVENT PRESSURE/ EFFECTIVE MENTAL APPLICATION/ SELF CONTROL & DISCIPLINE</p>

Table 6.27 Conceptual and category convergence of Dealing with Event Pressure, Effective Mental Application and Self Control & Discipline within the Elite Athlete Sample

The Olympic medallist in 2000 admitted losing over ten major international finals before securing an Olympic medal, but thought that he was extremely mentally tough and his peers also recognised him as one of the toughest competitors at world level. It has to be expected that athletes will suffer setbacks along the rise to the top, but it is how athletes deal with such negative events that determines if they become tougher as

a result. Those who deal with negative outcomes constructively and learn from the experience eventually end up being more complete athletes and tougher to compete against. It seems paradoxical, but it is possible for an athlete to have failed and be recognised as mentally tough as all the athletes within the study have many losing experiences documented, that they believe contributed to their mental toughness development.

Such win loss records to an outsider would seem to be unacceptable and mental toughness would not be associated with someone who continually fails. However, such interpretation is only based on absolute success in terms of outcome (i.e. Winning Gold) and not on relative criteria which athletes hold personally. Athletes who do fail can be tough mentally and may well be developing their toughness as they progress in their sporting careers. A quite different type of setback (squad de-selection) is offered by another Olympic athlete in Table 6.28.

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / transformation into concept data and CATEGORY convergence
<p><i>I think it's quite important. I was going for Atlanta 1996 and missed out by a point in selection, and I was down for about three months, and it hit my confidence, but I wanted to go for the next one in Sydney 2000. You have to be strong and decide what you want to do. It was a big decision; at the time you need to take stock and I would say that you have to fail in order to succeed. I think if people take a setback the right way it can help them, some people don't have that and they can't really deal with it.</i></p> <p>Elite Athlete 9-Badminton</p>	<p>The meaning attached to de-selection is intense following three years devoted commitment and dedication. However, the internal motivation to achieve was more intense and the athlete conveys the drive and desire that supports mental toughness. It involved complex cognitive processes (decision making) and a period of reflection which rationalised the judgement that one needs to fail in order to get tougher and succeed. Mentally tough athletes take and absorb failure in a different way to lesser athletes and are more constructive in terms of how they accept and cope with setbacks.</p> <p>dealing with setbacks/ self realisation/ taking responsibility/goal setting/ self confidence</p> <p>DEALING WITH EVENT PRESSURE</p> <p>SELF CONTROL & DISCIPLINE /</p> <p>EFFECTIVE MENTAL APPLICATION</p>

Table 6.28 Conceptual and category convergence of Dealing with Event Pressure, Effective Mental Application and Self Control and Discipline within the Elite Athlete Sample

Confronting de-selection from an Olympic squad which an athlete has dedicated nearly four years of ones life has to be extremely difficult to deal with. Acceptance of failure, dealing with disappointment and emotionally coping with such a massive setback requires mental toughness. Particularly, when it concerns ones livelihood and is perceived to be extremely important to the athlete. It requires courage, perseverance, intense motivation and determination to future commitments. Participants agreed that such circumstances demand mental toughness be displayed in abundance as the following athletes explain in Table 6.29.

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / transformation into concept data and CATEGORY convergence
<p><i>I definitely think that it does and can push you on as it brings out that side of you. The easy thing is always to walk away from it isn't it? The hard thing is to stay and confront it, but I think that any sort of thing that sets you back can galvanise something in you and make you mentally tougher.</i></p> <p>Elite Athlete16- Field Hockey</p>	<p>The athlete infers that people have different sides to their character but the tough ones are challenged to respond differently and prefer to take the more difficult option of confronting the problem head on and dealing with it to achieve a successful outcome. Dealing with a setback is viewed as an opportunity to turn a negative into a positive experience that develops ones character. The implication being that it has dispositional qualities and some people have it whilst others may lack it.</p> <p>dealing with a setbacks/ determined</p> <p>DEALING WITH EVENT PRESSURE/COMMITMENT & DETERMINATION</p>
<p><i>Setbacks can do people favours if they learn from the set back. Because I learn from them, I went away and we analysed what was wrong. We had to come away from that particular experience and know we are going to become better rowers, mentally and physically. That came from learning from setbacks. Well to me, from that set back we were able to learn, and then that is when the work has to happen and required total commitment and dedication.</i></p> <p>Elite Athlete 2- Rowing.</p>	<p>The athlete explains that meaningful analysis is behind developing toughness in acceptance of what ones limitations may be and what is required to deal with them. Becoming tougher is down to improvement on ones deficiencies and such mental processes is where mental toughness is grounded. Dealing with serious setbacks requires total commitment and dedication/ determination.</p> <p>dealing with a setbacks/ coping with adversity/commitment / determination</p> <p>DEALING WITH EVENT PRESSURE/COMMITMENT & DETERMINATION</p>

Table 6.29 Conceptual and category convergence of Dealing with Event Pressure, Commitment and Determination within the Elite Athlete Sample

By adopting such interpretative method and data analysis it provided the researcher with deep insightful data which allows a re-conceptualisation of mental toughness.

Figure 5.11 shows the conceptual structure which demonstrates the diversity of phenomenological interpretation of the concept of 'winning mentality' and provides evidence that it can hold many different meanings to people. The following examples in Table 6.30 from athlete quotations support the above conceptual framework with IPA analysis.

Direct Interview Quotation / Athlete / Discipline / Concept	IPA Interpretation / transformation into concept data
<i>I think you learn that by winning and knowing yourself and by being in that situation before.</i> Athlete 1 – Badminton / Knowing how to win	Transformation of knowing how and learning how to win as a result of previous experience
<i>Knowing how to win at the same time as playing poorly -</i> Athlete 30 – Badminton/ Knowing how to win	Winning is more than playing well. It requires other aspects and skills which are related to knowing the game.
<i>I mean the better you are mentally the easier it is to be tough because you are very rarely rattled</i> Athlete 26-Badminton / Higher level mental skills	The athlete infers that mental toughness is directly related to superior mental ability and little provides mental disruption.
<i>When I am down is when I am stronger.</i> Athlete 20 – Badminton/ Mental Resilience	The athlete explicitly states that mental toughness is more directly related to adversity and is more likely to be more intense when faced with such situations.
<i>You have to make things happen in your life and if you don't you it will pass you by. You have to be prepared to go through hell to make it happen.</i> Athlete 1-Badminton / Making it happen/Ability to seize the opportunity	The athlete attaches meaning to internal self control, self direction and exploiting one's opportunities when they emerge. Also the acceptance that one has to be prepared to suffer to achieve such rewards.
<i>The biggest thing for me in mental toughness is doing it when it matters. I have known really tough trainers and even though mentally tough trainers they have not been able to deliver in competition.</i> Athlete 37-Swimming / Doing it when it matters	Being able to deliver the goods when required in critical moments is what matters most. The pressure in competition is very different to those experienced in training situations. The meaning of pressure in competition is more serious than merely training for competition.
<i>We were just kind of grinding it out, grinding it out and then we scored, we were just hanging on at the end.</i> Athlete 28- Field Hockey / grinding a result	Mental toughness is associated with the need to constantly erode away at the opposition during performance and includes an element of patience. The athlete infers this may well be a dispositional characteristic that is consistent and enduring in their behaviour.
<i>People that are like me are just continually grinding it out.</i> Athlete 28- Field Hockey / grinding a result	

In road racing you don't win anything for being nice! In the later stages you just can't be and if you do then you just won't win. Athlete 18- Cycling / Being ruthless

The athlete attaches meaning to what competitive behaviour requires. Mental toughness is not linked to moral or sensitive characteristics which have sympathetic tendencies for feeling sorry for those who fail at your expense. There can only be one winner and in racing it has to be you that achieves the gold medal.

He is the one who will hang in at the deciding frame, or like, you know, being 8 nil up or five nil down, at the end of the day he wants to be the winner. Athlete 8- Snooker / Winning mentality

Meaning is attached to a never or say die attitude irrespective of the current situation. Winning is considered as an internal need and desire.

Table 6.30 IPA Conceptual transformation of key coded themes of Winning Mentality within the Elite Athlete Sample

The psychological skill of staying focused on the task at hand despite performance distractions is undoubtedly perceived by athletes to be a crucial characteristic of a mentally tough athlete. Focusing involves many different aspects of performance and is a complex mental skill. It is an advanced skill and elite athletes perfect their focusing skills in an arena which is much more pressurized than most normal sporting situations. It involves being very selectively tuned in and being able to widen ones focus to see the bigger picture as highlighted by an experienced hockey player:

I think it's getting the right focus at the right time isn't it? It could be in a game, but that's only a small part of being mentally tough. It might be that you have to actually widen your focus to some other point to take in other issues. Elite Athlete 16- Field Hockey (ability to focus)

The athlete implies that focussing is about direction and timing and it requires a person to be aware of both specific and wider performance issues. Other athletes highlight this in linking it with the necessity to deal with distractions whilst taking a penalty in a medal shootout in an Olympic playoff (EA34, Table 6.31) and the problems associated with the enormity of an Olympic event. Because of the enormity of the event at a World Championship / Olympic Games event, the 'circus environment' provides additional distractions such as the world media, additional expectations and the whole scale of events are magnified massively. Athletes who win

medals realise and adapt well to change within the environment and deal with them even though difficult (see Table 6.31, EA 34 & 35).

Direct Interview Quotation / Athlete / Discipline	IPA interpretation / concept / CATEGORY convergence
<p><i>It is just means being very focused. I thought to myself I am focused. I thought not just for myself, but also for the country and for everybody else. I was definitely focused on it because there are so many people saying good luck, and I just walked away. I just didn't want to know. I was kind of cocooned in myself for the whole ten minutes and wasn't involved really. I was confident in my ability and needed time to basically gain control of the whole situation.</i></p> <p>Elite Athlete 34- Field Hockey.</p>	<p>Being focused has personal meaning but also it means a great deal to the athlete to perform well for others (e.g. friends, colleagues, coaches, country etc). The pressure created both internal and external interference that the athlete had to block out immediately in order to apply herself to task. Being focused meant being distanced from all interference and totally immersed in the task and the need to get in control. The magnitude of such pressure is only experienced by the athlete within their world. Outsiders remain distanced from such pressure and are only observers.</p> <p>ability to focus / dealing with distractions/ emotional control</p> <p>DEALING WITH EVENT PRESSURE</p> <p>SELF CONTROL AND DISCIPLINE</p>
<p><i>As Adrian Moorhouse said back in 1988, you have just got to go to the Olympic Games and right the way through you have got to not let anything get to you. But what normally does not get to you does, whether it is the Australian team walk in, or just seeing the greatest athletes in the world around you and being over awed by them. You have just got to think well you are amongst them and you are one of them really.</i></p> <p>Elite Athlete 35- Swimming</p>	<p>The athlete conveys the immense difficulty in avoiding distractions at an Olympic event. Athletes do not have immunity from outside pressures; they need to deal with them. The athlete implies that pressure amplifies the potential of rather minor distractions to be serious disruptive influences on performance if not controlled. Avoiding being overawed by competitors is important and having a high sense of self respect and self esteem is crucial in dealing with such a situation.</p> <p>ability to focus / dealing with distractions/reactions to others</p> <p>DEALING WITH EVENT PRESSURE/SELF CONTROL & DISCIPLINE</p>

Table 6.31 Conceptual and category convergence of Dealing with Event Pressure and Self Control & Discipline within the Elite Athlete Sample (A34/ A35)

The above examples highlight the problems elite athletes face when in high profile, mass media events such as the Olympic Games. It provides distractions unequalled in the sporting world, which if absorbed and not controlled are potentially damaging to ones performance. The category 'dealing with event pressure' is supported within the emergent grounded theory framework by the 'effective mental application' category. The justification being that applying mental skills determines how well one deals with

event pressure. Such findings fully support the work of Jones *et al.* (2002), Middleton *et al.* (2004) and Bull *et al.* (2005). This will now form the focus of discussion.

Effective Mental Application

The perceived importance of applying psychological self regulatory skills in determining mental toughness has been identified in previous literature but there has been little acknowledgement that some skills are more important then others (Bull *et al.*,1996; Goldberg,1997). The latest research identifies task specific attention and stress minimisation linked to emotional reaction to adversity as the most prominent mental skills connected to mental toughness (Middleton *et al.*, 2004).

The previous results section which discussed 'effective mental application' showed that 'dealing with anxiety' and having 'absolute focus' were perceived by elite athletes to be the most critical mental skills required for mental toughness.

The most graphic example of dealing with cognitive anxiety in the form of self doubt was offered by a double Olympic Gold medallist whose rowing crew lost a vital crew member to injury shortly before the Olympic Games. The personal account connects self belief and the use of effective mental skills in dealing with high levels of cognitive anxiety (Table 6.32).

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / concept / CATEGORY convergence
<i>Deep down I believed everything was going to be OK. When it wasn't it was that kind of soul searching positive self talk. I mean the positive self talk exercises that I went through I needed to reassure myself that I could do it, to reassure each other that we are only missing one crew mate, that there are still three of us who are world champions and we are only making one small change, and turning everything into positives. That was very important. I distinctly remember thinking at the Olympics, everyone is going to think they can get us now, what they don't realize is how much work we have done with the spare and how good the spare is, and what a good athlete she is, so we were constantly flipping what</i>	<p>Foundation of self belief and the use of +ve self talk in difficult moments and dealing with a setback.</p> <p>(use of +ve self talk) for re-assurance and confidence for oneself and others (colleagues)</p> <p>Rationalisation to minimise the task difficulty and to maintain confidence</p> <p>The athlete perceived the outside threat as a challenge and employed cognitive restructuring to assist in her preparation.</p> <p>The perception was rationalised and considered a true reflection of the situation (real).</p>

<p><i>was potentially disastrous thoughts and, into positives. It wasn't being silly about it, it was reality. The replacement was a bloody good rower, we had done timed pieces, the boat wasn't slowing down, so all the objective evidence we had said we can still do it.</i></p> <p>Elite Athlete 2-Rowing</p>	<p>Being determined to reach ones performance objective</p> <p>Overall a major setback which required effective mental application in numerous concepts. Altogether a situation which provided a serious state of adversity for the rowing crew to deal with over a 3 month period prior to an Olympic event.</p> <p>self belief use of +ve self talk mental preparation dealing with distractions dealing with anxiety dealing with a setback determination</p> <p>SELF CONTROL & DISCIPLINE EFFECTIVE MENTAL APPLICATION DEALING WITH EVENT PRESSURE COMMITMENT & DETERMINATION</p>
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Table 6.32 Conceptual and category convergence of Effective Mental Application , Dealing with Event Pressure, Self Control & Discipline and Commitment & Determination within the Elite Athlete Sample (A2)

Elite athletes generally commented that dealing with the anxiety was not that daunting and they enjoyed it, supporting the contention that successful elite athletes interpret anxiety states more positively than less successful ones:

I mean everything about my sport was so high pressure. I had my sponsorship contracts which were all performance related, everything I did was on the edge. But I liked it; it brought out the best in me. I thrived on it, I loved it, that is what I miss most, being under pressure. I don't miss playing badminton. I miss pressure. Elite Athlete 26 -Badminton- (World Championship Bronze medallist, Multiple Commonwealth Medallist and Ex -All England Champion)

These findings support Jones *et al.* (2002), in that elite athletes thrive on competition pressure and accept competition anxiety as inevitable, but know they can cope with it. Having such a positive psychological interpretation of stress and anxiety may well make the difference in being able to compose and control ones emotions in a highly stressful environment. The examples that reflect anxiety control is an essential aspect related to mental toughness are from athletes who have gained medals, and this provides important new research evidence. To date very few mental toughness studies

are available which consider the perceptions of actual medal winners, only Middleton *et al.* (2004) has previously targeted purposive samples of medal winners.

Self Confidence and Belief

Self belief was a heavily substantive concept, but findings show that self confidence in ones 'ability to perform' at the very top level was perceived to be equally as important. Such findings totally support all previous research in that self belief/confidence is quite possibly the central ingredient of what makes an athlete mentally tough (Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*, 2005).

An interesting perception from the findings is that athletes gain confidence from the respect they receive from fellow competitors. Peer recognition and respect only serves to fuel mental toughness in athletes, which seems to be counter productive and increases the psychological advantage.

Given the phenomenological examples from the current study 'self confidence in ones ability' seems more related to self efficacy and 'task specific' confidence rather than overall self belief. Athletes use the terms interchangeably and confidence appears to fuel overall 'self belief' and 'being in control' as one Barcelona Gold Medallist comments:

In Barcelona the confidence was there to win the gold medal. But as a performer, the bottom line of being a performer I think, I was just confident. I think I believed in myself, I was in far more control and understanding of my ability in Barcelona.
Elite Athlete 2- Rowing Olympic Gold medallist

However, the same athlete implied that such confidence was only attached to her rowing ability and not to wider situational circumstances, which makes it much more related to self efficacy:

You put me in a gym, put me on the water in a boat with an oar in my hand and I am so confident. You can be horrible to me and I don't care. I don't care if they are staring at me, I am so confident. It is just not an issue. But how come when I sit at my computer at home and I have to type a business letter and I and I print it off, I cannot put that letter into an envelope

without showing my partner and asking him if he thinks it is OK, does it read ok ? Elite Athlete 2-Rowing

The perception is more directed to the athlete's judgement in her ability to succeed in reaching a specific goal and such findings support the major self efficacy concept within the Middleton *et al.* (2004) study with elite medallists.

The following account captures the contribution being confident makes to an athlete in an Olympic final:

I was very confident going in so I put a lot of pressure on myself, but I knew that I would swim well. It wasn't like I had bad illness that day and I thought I won't. All year I was quite confident really, so I didn't feel too much pressure. I thought I would get a medal, and then of course I got to the final and thought well it is gold or silver. I was convinced I would get a medal, but I was thinking gold or silver. That is the most confident I have been in my life. Elite Athlete 35- Swimming (Olympic Medallist 1996)

The athlete acknowledges pressure, but being confident negated such pressure and minimised its potential impact on performance. The account implies that confidence was stable over a long period of time (one year) and built up a self belief that a medal was more probable than possible. In a similar way having high self confidence may well act as a buffer to cognitive anxiety and protect athletes from potential distractions leaving them to apply competitive focus to all that is required to perform well.

A Commonwealth medallist explains:

For the last couple of years now I have just been so confident. I have got so much faith in my swimming and my swimming ability. I know nobody can get at me. You know I just know that I need to get into a pool and do it. Elite Athlete 25- Swimming (confidence in ability and the reduction of doubt/ worry)

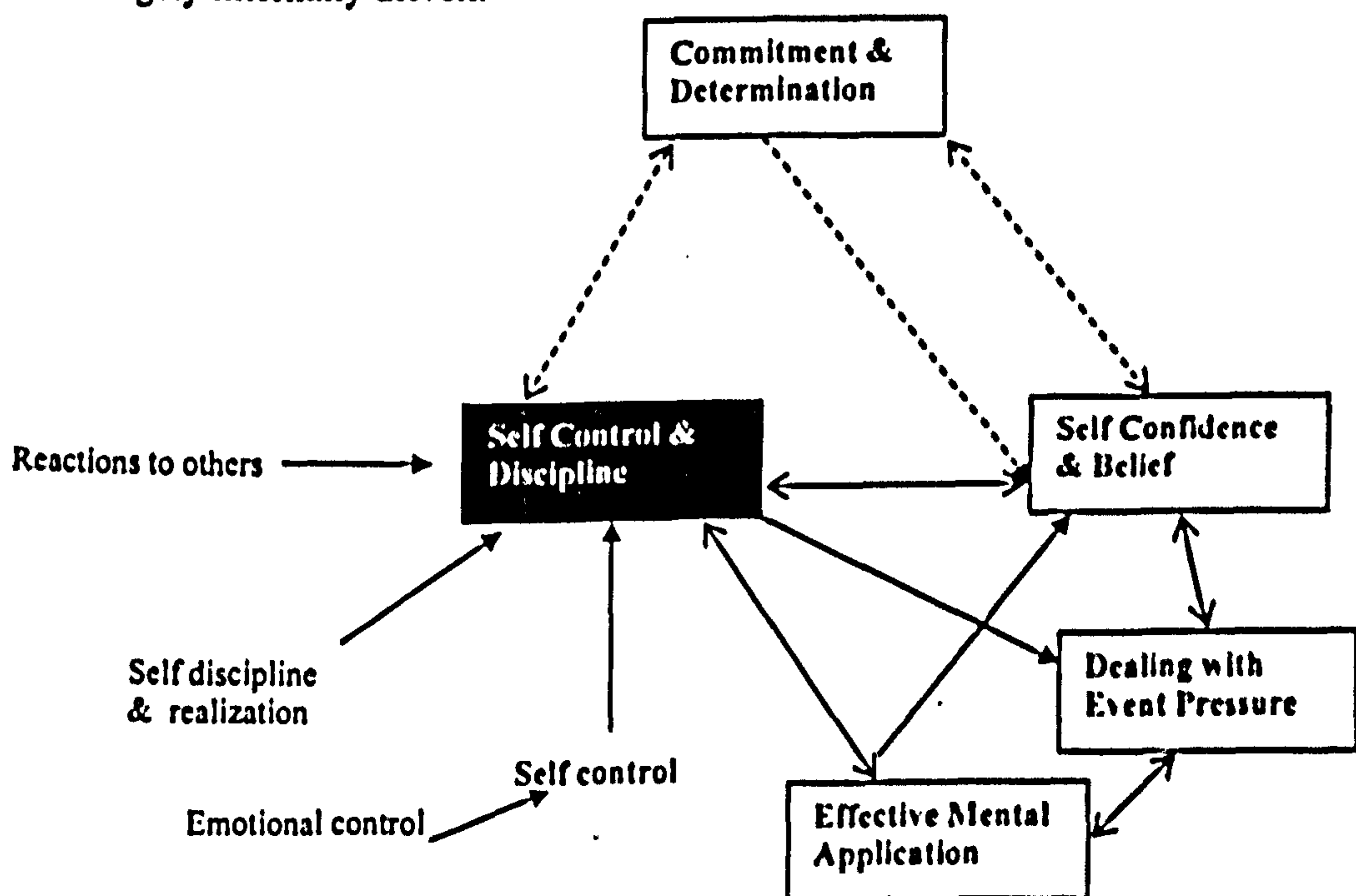
It seems that being extremely confident and having self belief that you will achieve your competitive goals provides a level of toughness required in gaining a medal or that you are just much better than your opponents. The previous account implies that the athlete recognised faith featured in the process. This implies the athlete trusts that

they will perform well and this itself provides a degree of immunity to external distraction which allows the athlete to just focus on their performance.

The findings demonstrate that adoption of a phenomenological approach allows diversification of meaning to emerge within data and provide evidence that some concepts mean different things to different people. Self confidence and self belief are concepts which do not receive diverse accounts from participants. The belief in ones ability to achieve/ succeed in achieving a specific goal receives wide acceptance from many participants. It is quite possibly the most important mental toughness characteristic of them all.

Self Control and Discipline

Self Control and Discipline within the elite athlete sample provided connections to four other categories (see Figure 6.2). It emphasizes the need to accept control, stay composed, stabilize control and avoid losing control in pressure situations. It also highlights that self control and discipline is required in a variety of performance areas and is largely internally driven.



258 Figure 6. 2 The connections between four major categories and the concepts supporting Self Control and Discipline within the Elite Athlete sample

————— = direct support
 - - - - - = partial support

Establishing self control is considered as paramount to performance success (Gauron, 1984; Cohn, 1991; Bull *et al.*, 1996; Hardy *et al.*, 1996; Goldberg, 1997). Yet, previous mental toughness research has not identified it as a major concept which is surprising, given its perceived importance (Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*, 2005).

The conceptual connections within the category have previously been discussed (Chapter 5), but its links to other important categories is particularly interesting.

Control and discipline is required in both direct competitive performance situations such as controlling ones anxiety responses to stress, emotional responses to mistakes and setbacks or pain, regaining mental control following unexpected, uncontrollable events as well as having control over wider more general aspects of performance, such as training programmes, social and lifestyle issues. Potential interpretation of how and where self control is required by athletes may well differ depending on the situation but as a mental concept it is generally accepted as a major factor in mental toughness, particularly in high pressure situations and emotional issues (see Table 6.33).

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / concept / CATEGORY convergence
<i>Mental toughness to me is being in control of your emotions, being in control of everything so when you are on match point, when you are on that key point that wins you the match you are in total control.</i> Elite Athlete 20- Badminton	Emotional control in critical moments (match point). Perception that such instances provide different intensities of emotion that requires greater control.
<i>It is just when the emotions take over, you sort of lose control, and you lose sight of what you are actually doing on court. You know if let a little bit of emotion out, if you have won a good rally or whatever, an important point, to show some emotion like a clenched fist or a shout, that is good I think that is good because it is positive emotion. But, if you lose an important rally or you made a bad error and you swear or throw your</i>	Emotions directly interfere with attention control in a negative way if not controlled. Emotional reactions need to be tempered and the athlete is well aware of emotions contributing to a detrimental effect on performance if they are not arrested. A lack of task focus is a consequence of losing emotional control and a lack of control is an indication of a lack of being mentally tough.

<p>racket around, obviously the emotions are working in a negative way. Elite Coach 26- Badminton -</p> <p><i>I still use the word control really, being able to just keep control and stay in control and stay with it, and recognising that everything around you is just happening. You know, you are not going to go to the Olympic Games and be on that firing range and be as calm as Larry because that isn't going to happen. There is going to be that tension, there is going to be those nerves but it is how you control them.</i></p> <p>Elite Athlete 7 Modern Pentathlon-</p> <p><i>I think as an overall picture mental toughness is being able to having the mental ability to get on with what you intend to do, regardless of whatever else is happening. I would say the hardest thing to do is retain the mental control when something actually goes physically wrong, and to be able to put yourself back on track without losing that concentration.</i></p> <p>Elite Athlete 17- Kayak -</p>	<p>Behavioural responses are coupled with such emotions and these can have +'ve or -'ve effect. They also provide an indication to opponents as to your mental stability.</p> <p>The perception that one needs to keep control as opposed to gaining control. It also implies that when in control the environment is passive and non- threatening. The athlete accepts that major events are pressure cookers and nerves are inherent in such situations so the more control one has the better one will perform. A perceived link to the effective use of mental skills and ultimately event the ability to deal with event pressure.</p> <p>Perceived mental control is linked to physical performance although it may be the athlete is referring to canoeing technical proficiency. The account is implying the ability to deal with error correction and making a mistake but to not let it negatively influence ones concentration.</p> <p>Emotional control/ self control/ self discipline</p> <p>SELF CONTROL & DISCIPLINE/ EFFECTIVE MENTAL SKILLS/ DEALING WITH EVENT PRESSURE</p>
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Table 6.33 Examples of IPA, emergent 'Self Control & Discipline' and conceptual convergence with selective categories

Self discipline and being self demanding were both strongly related to self control and each attracted over 25% of sample accounts. Personal accounts reflected that self discipline was required to maintain ones performance standards over time:

You have got to be disciplined in any sort of top level sport, physically and mentally, that you know you have got to stay on top of it all.

Elite Athlete 20 – Badminton (self discipline)

In many ways being disciplined transfers to a variety of lifestyle issues which one athlete perceives to contribute to what makes the total performer:

Self discipline is important as you have to demonstrate mental toughness all the time. To go to bed at 10 every night and be ready to train, to eat the correct food and get the energy in, to maintain a performance level without lapsing and to basically look after yourself, that's a lifestyle issue. Elite Athlete 25– Swimming (self discipline)

Self discipline is arguably directed by a person being self demanding and imposing personal standards by which they operate and guide their thoughts and behaviour.

It is internally driven and is linked with dedication, drive and desire (commitment and dedication category). Being self demanding was identified by athletes in rowing, cycling, badminton, canoe slalom and swimming and every athlete who cited the theme had achieved a major event medal. The perceived importance of being self demanding in its contribution to mental toughness was summarised in one personal account from an Olympic silver medallist:

You need to demand standards from yourself on a daily basis. You need to uphold those standards and seek to improve them and work towards achieving your dream. Only you can drive them and realise them not other people. When I achieve a medal I want to know that it I have done everything I can do and no more. Elite Athlete 23– Canoe Slalom (being self demanding)

Such behaviour is intrinsic and largely dispositional and self demanding athletes work independently and assume personal responsibility for their actions (as supported in the independent / responsibility concept data). Although not a widely recognised aspect of mental toughness in all previous literature adopting a phenomenological approach with grounded theory analysis has allowed such an important characteristic to emerge.

Commitment and Determination

Given that self control and discipline is connected to determination (self) and an athlete's commitment. Table 6.34 shows the conceptual support for the category 'commitment and determination' within the elite athlete sample.

Findings provide evidence that elite athletes perceive the motivational characteristics to be centrally related to the phenomenon. The evidence suggests that such motivation is deeply embedded within athletes as examples demonstrate; 'Wanting it badly enough', 'being totally dedicated', 'totally committed', 'channelling your desire' and having a 'driving ambition' all suggest deep rooted motivation to achieving success. It dictates how athletes apply themselves totally to the quest for medals at the highest level. It is unconditional commitment, dedication and determination to succeed at the

very highest level and athletes demand performance standards of themselves which are extremely difficult to sustain in training aimed at driving them on to medal winning status (a link with being self demanding). An international sailor preparing for Olympic competition endorses such thoughts, linking it with 'extending beyond the comfort zone', and dealing with setbacks (see Table 6.34).

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / concept / CATEGORY convergence
<i>It's a person's determination and their confidence, and a lot of it is their will and their want to achieve. A lot of it comes from that. Basically, it is how far a person is prepared to push themselves to get through something. Also, it is the ability to cope with things when things get bad and when they are in physical pain, and they have to push through the pain barrier. Elite Athlete 22- Sailing</i>	<p>The perception that concepts do not operate alone and combine to create a mental toughness condition. The athlete suggests an assortment of mental qualities that he thinks are necessary for success. An intense desire to achieve driven by sheer will and determination and a person must ask themselves what they are prepared to go in their quest for ultimate achievement. Such experiences may well prove to be uncomfortable and pain tolerance is considered an important prerequisite in the sailing discipline.</p> <p>self confidence /determined/physical coping ability /dealing with pain/extending beyond the comfort zone</p> <p>Determination / Physical Coping Ability</p> <p>PHYSICAL COPING ABILITY/ COMMITMENT & DETERMINATION</p>

Table 6.34 IPA and conceptualisation of Commitment and Determination within the Elite Athlete sample

The personal account is reflective of many comments which support the link with commitment and determination and provides an indication that such intense determination may well require additional coping responses. Having determination and being committed alone may not be enough as it would be expected that nearly all elite athletes have that to a large extent. In some physically demanding disciplines having the ability to withstand pain and discomfort is perceived to a crucial ingredient of mental toughness.

Physical Coping Ability

As highlighted within the previous results Chapter 5 , 'physical coping ability' may well be related specifically to endurance, strength and power based sports which require effort and technique to be displayed whilst enduring physical discomfort or emotional pain. The findings within Table 6.35 relate the category to disciplines such as badminton, swimming, field hockey, rowing, cycling and sea kayaking. There are gender similarities within the 'coping with discomfort' and ' physical fitness' concepts but all interview data connected to 'extending beyond the comfort zone' was predominantly from female Olympic rowing medallists.

It is highly likely combating physical pain as opposed to emotional pain is discipline specific, emotional pain being more generic and applied to most disciplines as it is generally linked with failure and disappointment. The results do support the work of Jones *et al.*(2002) whose seventh ranked attribute of twelve was concerned with *'pushing back the boundaries of physical and emotional pain, whilst still maintaining technique and effort under distress in training'* (p.212). Recently, Middleton *et al.* (2004) linked mental toughness strongly to dealing with adversity and their findings also reported such adversity experiences ranged greatly and included things such as: high level of pressure, physical pain associated with high physical effort, competing with injury, falling behind in competition and performing in bad conditions. Within this study adversity may well be considered as a common thread in relation to mental toughness and in this way the findings concur with those of Middleton *et al.* (2004), although it falls short of agreeing with such work in that mental toughness primarily exists in relation to dealing with adversity.

EMERGENT CONCEPT	KEY CODE POINTS	INTERVIEW SOURCE
Coping with Discomfort	Combatting physical discomfort Dealing with pain Tough training Sustained toughness Performing when not 100% Holding it together when fatigued	3,4,17,19,24, 1,3,4,11,17,19,25,34 3,4,18,20,27 2,3,4,17,26,28,32,34 36 1,20,26,28,29,36,37 28,29,34
Physical Fitness	Physical toughness Physical confidence	1,2,3,4,6,11,26,34 2,3,4,9,20,26,30,35
Extending beyond the Comfort Zone	Extending oneself Pushing oneself Going beyond where never been before Team application beyond comfort zone	2,3,4,19, 24, 2,3,4,34 2,3,4,

Table 6.35 Conceptual support for 'Physical Coping Ability' category within the Elite Athlete sample (female responses in bold)

Interpretative phenomenological analysis identified coping with physical discomfort as being a major aspect of mental toughness and this being linked with 'physical fitness' and a person not worrying about 'extending oneself beyond the comfort zone' (see Table 6.35). Specific application was directed at intense effort whilst competing and dealing with pain (rowing, cycling, and swimming- EA 3, 4, 11, 19 & 34), training toughness and pain tolerance (rowing, swimming, badminton and canoe slalom -EA 3,4,18 & 20), sustaining ones toughness whilst in discomfort (rowing, kayaking, badminton, field hockey, canoe slalom and tack and field athletics), performing when not 100% (rowing, badminton, field hockey and swimming- EA 1,20,26,28,29,37), and performing when fatigued (all field hockey -EA 28,29 & 34). The previous chapter provided numerous accounts relating physical coping ability to mental toughness and the following selective examples in Table 6.36 highlight IPA support for the conceptualisation of mental toughness.

Direct Interview Quotation / Athlete / Discipline / key code/Concept / CATEGORY	IPA Interpretation / concept / CATEGORY convergence
<i>We went out we knew we had to go out and do something that we had never done before; we had never done in training before</i> Elite Athlete 3-Rowing	A collective perception of the need to absorb pain and explore pain thresholds never experienced before in order to win gold at the Olympics. A lack of fear of the unknown. extending beyond the comfort zone / lack of fear/ winning mentality
<i>For me it was the hardest race I'd ever had apart from that was the 1996 final in Atlanta where I couldn't move for about ten to fifteen minutes afterwards, I was so exhausted. I wanted to feel that sort of pain, which in way would make you connected to each other. It was about how we were going to over-ride the pain that was, a way of getting ourselves up to be able to receive it, which was mental toughness.</i> Elite Athlete 3 – Rowing	Retrospective recall of a previous experience in which pain was tolerated. A perception of the scale of pain that was required to be dealt with which in some ways connects the rowing team as pain is also being dealt with by others in the boat. Knowing how difficult it will be before the event and pushing through to increase such pain demands mental toughness. dealing with pain/ physical coping ability/ mental preparation
<i>To push yourself through big pain you have to be mentally tough .You can be physically strong and gifted but can be mentally weak.</i> Elite Athlete 17 – Canoe Endurance	The perception that physical prowess does not equate to mental toughness. dealing with pain / combating physical discomfort DEALING WITH EVENT PRESSURE / EFFECTIVE MENTAL APPLICATION/ PHYSICAL COPING ABILITY

Table 6.36 IPA Interpretation and conceptual convergence of Physical Coping Ability

Overall the category was more substantive than previous literature has acknowledged and provided indication that a psycho-physiological link is in need of more research attention when considering a broader definition of mental toughness. It may well however, be discipline specific. The final category which emerged linked mental toughness to wider performance issues such as training and situational factors.

Training and Situational Factors

Training and situational toughness as a category connected many external factors that athletes are required to deal with which basically happen outside of the direct competitive performance but if not handled effectively may well destroy the athlete due to the enormity of what has to be considered. The category integrates two major concepts but includes a wide variety of coded properties, which are required to be dealt with if one aspires to be a mentally tough athlete. Table 6.37 shows contributing situational and training issues to the category together with identified sources. This

category has largely been ignored in past literature which is surprising given the interesting make up of the concepts and key codes which support it. Such diversity of different perceptions of what constitutes mental toughness is evident and emphasises the value of a grounded theory approach. The findings offer thirteen emergent key points in support of concept 'dealing with situational issues' and two devoted to the concept of 'training factors'.

Mental toughness is required in preparation for major events and through qualifying stages. It is required across a wide variety of different situational issues which the key codes demonstrate. Athletes require a general all round generic mental toughness which compliments competitive event toughness and this needs to be demonstrated.

The previous results section provides detailed evidence in support of this category and concept formation. The following selective accounts provide phenomenological support for such conceptualisation within the major supporting themes.

Direct Interview Quotation / Athlete / Discipline	IPA Interpretation / concept / CATEGORY convergence
<p><i>We trained really hard; we trained harder than any of the other teams. The coach gets you to do a lot of high lactate interval work. He teaches you to be very in tune with the physical pain that you are going to experience. I remember doing sessions above race pace and you're doing it really hard and you think you can do about 4 and you have 16 to go and somehow you get through them all.</i></p> <p>Elite Athlete 3- Rowing</p>	<p>Training toughness is perceived to be important to develop mental toughness. The premise being that one can be desensitized to pain and tolerate it more when in competition if subjected to it during training. If an athlete understands what pain is they may well be able to tolerate it more? Having athletes exceed race pace in training may well make the competitive pace more tolerable. The athlete seemed to not realise her physical and mental limits until really extended by her coach. The main point being that mental toughness is largely developed in training situations and event toughness may be a slightly different concept.</p> <p>Training toughness / dealing with pain/ Combating physical discomfort Training and situational issues Physical coping ability</p>
<p><i>We were being extremely competitive, when we were training and we were very very competitive every day, I mean I was even competitive off the water!</i></p> <p>Elite Athlete 4- Rowing (competitive training)</p>	<p>The perception that competitiveness in the training environment is linked to mental toughness but this may transfer to wider non-sporting issues which may prove unhealthy.</p> <p>Training and situational issues</p>

<p><i>I'm out at half five in the mornings, not getting in until say half eight at night, then normally do a couple of hours work to half ten / eleven and then have to get up again the next day. So doesn't make the easiest life really.</i></p> <p>Elite Athlete 35- Swimming</p>	<p>The athlete is conveys the difficulty involved in being a full time University student and an elite athlete preparing for an Olympic event. A lifestyle that requires links to self control and discipline / Commitment and Determination. A perception that life is difficult but one which is chosen by the athlete.</p> <p>Lifestyle demands/ Commitment</p> <p>The difficulty of being a part time athlete with a full time occupation and integrating with full time athletes who are fitter and better prepared than you. A different emphasis of mental toughness which is only applicable to selective individuals who have such situational circumstances.</p> <p>Competitive training</p> <p>Training and situational issues</p> <p>TRAINING & SITUATIONAL TOUGHNESS/</p> <p>PHYSICAL COPING ABILITY/</p> <p>COMMITMENT & DETERMINATION</p>
<p><i>It is a lot harder being part time. There were only three of us who worked full time at the World Cup. I am pitching up at a weekend knowing that those other players have had at least two training sessions that week that I haven't had.</i></p> <p>Elite Athlete 29- Field Hockey</p>	

Table 6. 37 Interpretation and conceptual convergence of Training and Situational Toughness

Situational issues cannot be marginalised and although they may be few in number they are capable of having tremendous impact on an athlete if not dealt with effectively. Overall, wider situational factors and dealing with them seem to contribute to what athletes perceive what mental toughness is all about. The issues that emerged such as problems with captaincy, team selection and squad selection, mental toughness related to different situational demands such as types of event, conditions, training versus competition and dealing with team mates all provide additional demands on athletes which require an element of toughness peripheral to the competitive event. In the large part such factors are often ignored and not well supported by previous literature. It is felt by the researcher that the adoption of the chosen method, the inclusion of IPA combined with the grounded theory analysis allowed the identification of unique mental toughness concepts not previously reported.

Summary

The chapter has discussed the emergent data from the three discrete sample groups and attempted to show how emergent grounded theory and interpretative phenomenological analysis can be applied to investigating a vague and misunderstood psychological phenomenon, which has in the past been characterized by a general lack of conceptual clarity.

Unlike previous authors Jones *et al.* (2002) and Middleton *et al.* (2004) the researcher is reluctant to offering a specific operational definition which would only serve to restrict the diverse nature of the findings and as a result of violate the reasons and purpose of employing such choices of method and methodology. The provision of an operational definition would not cater for the diversity of individual interpretation of mental toughness derived from participants. It does support aspects of both previous definitions in that it has found that mental toughness is related to coping better than opponents in many demands (lifestyle, competition and training), and is specifically related to being superior than opponents in aspects of determination, being focused, confident and in control when under pressure (Jones *et al.*, 2002). It also provides support that mental toughness is related to 'perseverance and conviction towards a goal despite pressure or adversity (Middleton *et al.*, 2004). However, the provision of a definition would need to be discipline specific rather than generic as there are subtle differences dependent on the nature of the discipline. Additionally, providing a precise definition could well restrict and limit what may be viewed as the complex presence and interaction of many of the emergent concepts. Attaining mental toughness may well require the presence of one or a number of identified concepts depending on the time, place and event being performed.

Reducing mental toughness to a distinct set of behaviours that may be generalised is not congruent with how phenomenology attempts to explain human behaviour. Each distinct population explains mental toughness from within their 'own world' that involves personal meaning in relation to how they interpret their reality. Each sample generated masses of key point codes which were conceptually linked and then further categorized into major components of mental toughness. To offer a restrictive definition would only serve to reduce mental toughness into a concise operationalised format which is not acceptable within a naturalistic paradigm. Mental toughness may be more suitably explained as a more complex and holistic phenomenon which is conceptually linked, not capable of being easily defined, measured, manipulated and eventually tested. In essence mental toughness can mean different things to different people and this research has attempted to demonstrate that perceptions do differ, even though through emergent grounded theory such perceptions have conceptual links, which if extended result in an abstract core category. For a conceptual interpretation of how the 3 emergent theoretical models compliment and contrast each other please refer to Figure 6.3. It demonstrates the overall striking similarity between the elite athlete / elite coach perceptions and the slightly contrasting adventure/ explorer perceptions of mental toughness. It also noticeably demonstrates how mental toughness is contextually driven and this is *not* a feature of previous work (Jones et al., 2002; Middleton et al., 2004). Noticeable category differences include elite athlete's recognition that 'self control and determination' are more importantly related to mental toughness than elite coaches. Athletes preferred 'commitment and determination' to the emergent 'motivation and commitment' within the coach sample. Commitment was considered a crucial component but athletes tended to link

mental toughness more with internal self determination and having the ability to successfully adopt an effective internal locus of control across different conditions.

Elite Athletes (n =37. 23f/ 14m)

Elite Coaches (n =33, 8f/ 25m)

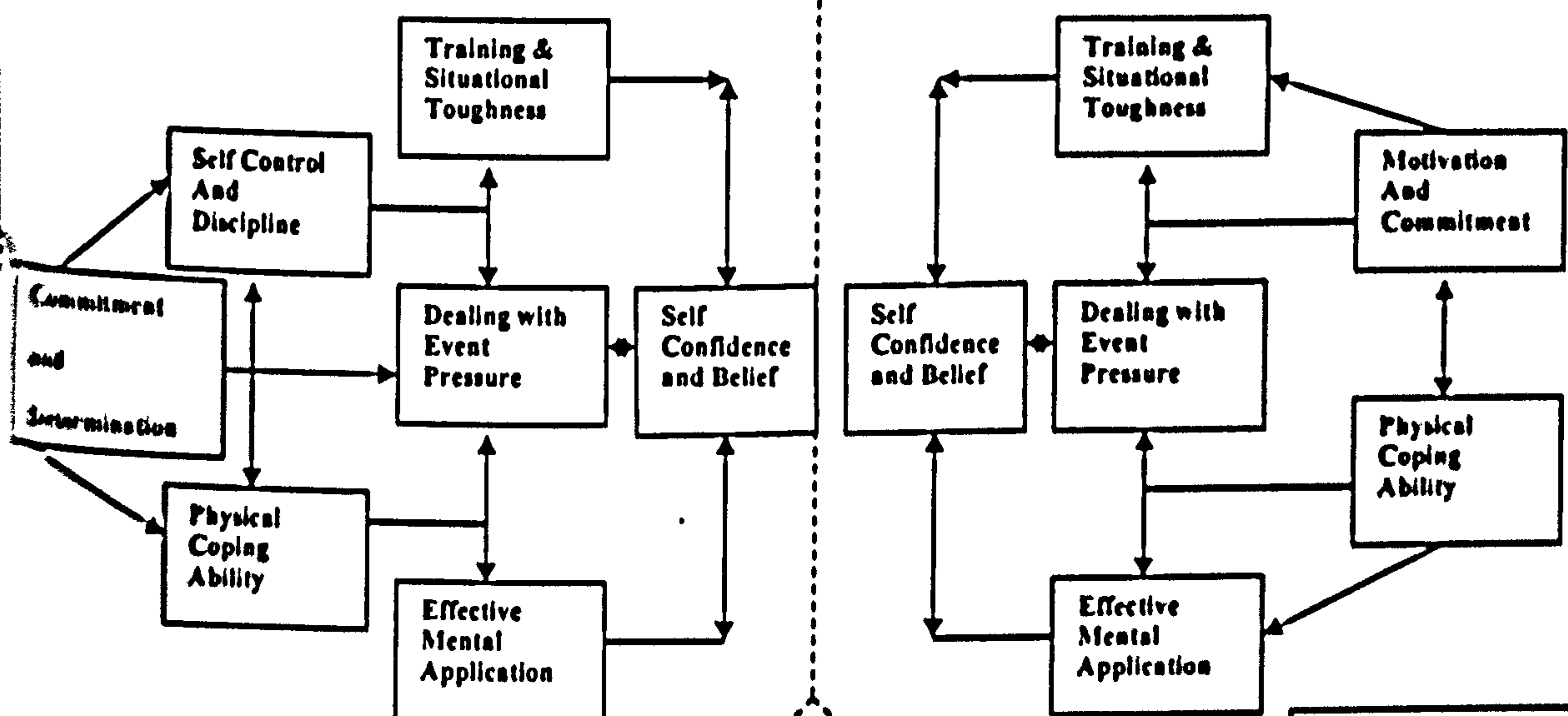
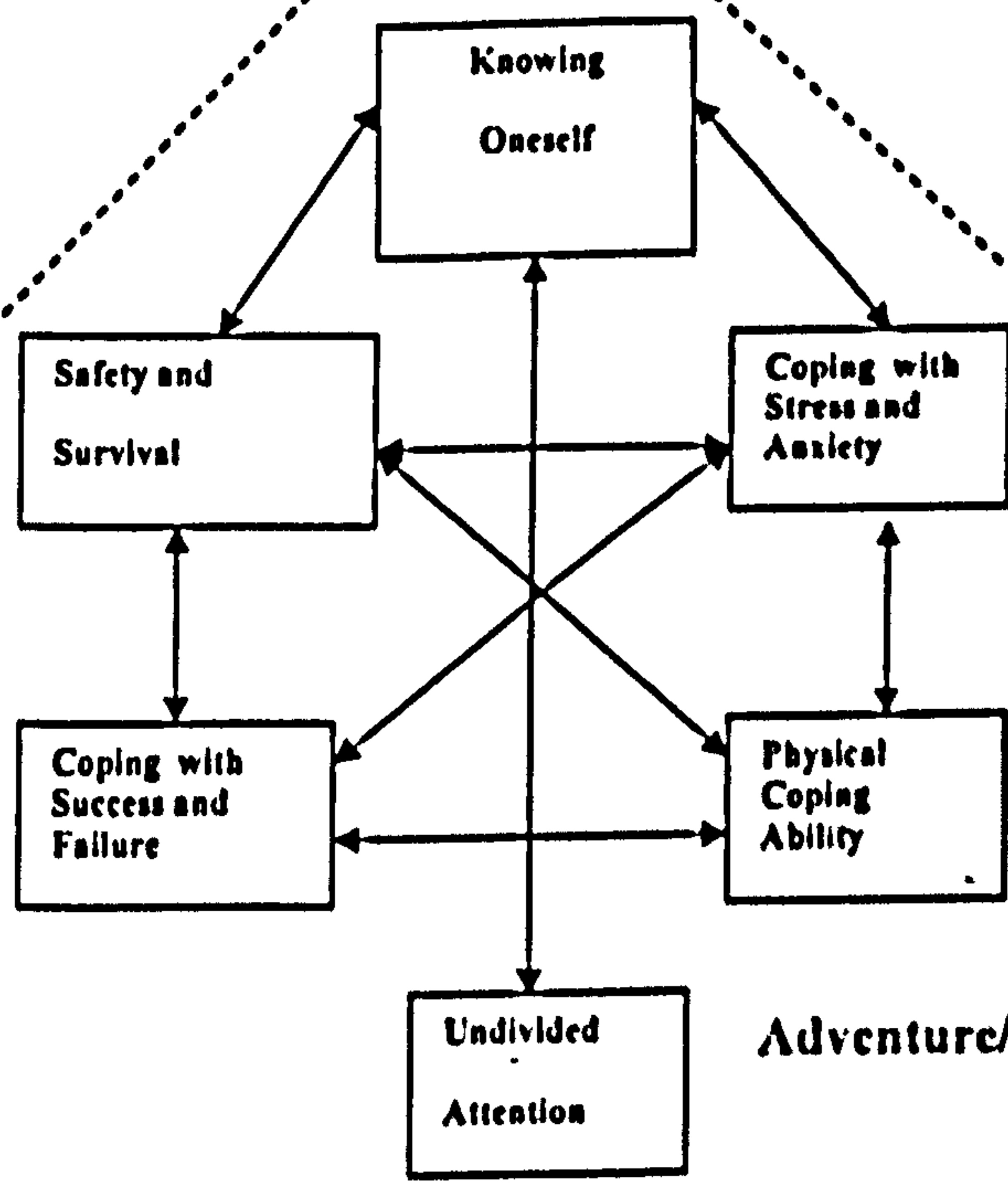


Figure 6.3
Contrasting Category Analysis
of 3 Grounded Theory Models of
Mental Toughness as perceived
by:
 1. Adventure/ explorer
 2. Elite Coach
 3. Elite Athlete



Adventure/ Explorers (n =21, 4f/ 17m)

An important common feature of the 3 theoretical models is that they are highly interrelated within their own theoretical structures. Each category has a reciprocal relationship with other concepts and categories, as highlighted within the previous results and discussion sections. On a critical note, the strength of the relationships between various concepts and categories may need to be further researched. The level of substantiation of conceptual and categorical depth within grounded theory investigation remains a debatable issue. Such critical consideration is not fully explored within previous work (Glaser, 1978, 1992; Charmaz, 2001, 2004) and more guidance is required for future grounded theory research. It seems to be an essential aspect for the true nature of the psychological theory to be established, and the researcher remains cautious about how such issues may be resolved.

The depth and resonance of concept and category intensity must be a result of both qualitative depth and meaningful data combined with overall substantive support from quantitative reinforcement of data. If a Glaserian approach is adopted and accepted then the data must be judged on its meaningful resonance as opposed to the frequency of its appearance within the data coding procedures. But, substantiation of conceptual density somehow needs to accept that reinforcement also needs to be a critical factor in achieving such resonance (Charmaz, 2004). It seems a well grounded theory requires both to be fully accepted and trustworthy.

Both elite athletes and elite coaches perceive mental toughness to be much more related to dealing with specific event pressure and the self regulation skills that are required to deal with such conditions. A notable differences would appear to point to the nature of the situational context (i.e. life risk situations / danger situations) being influential in determining the emergent perceptions of what and how people perceive mental toughness. But overall, the integrating framework of each grounded theory is

well supported through sound conceptual foundation. Even though subtle differences emerged within the 3 different models they generally show that 'self confidence and 'self belief' are well grounded in how all three samples explain mental toughness. These two unique characteristics seem to be the most important across all samples combined with the effective use of self regulation skills in dealing with stress and anxiety situations.

When considering possible wider application in life risk situations it would be interesting to research how more diverse populations such as armed forces personnel and police officers perceive the phenomenon. Future research directions will be offered in the final section together with the need to value a phenomenological approach in attempting to conceptualise and fully understand a conceptually vague psychological phenomenon such as mental toughness.

It is important to avoid absolute comparison whether certain people or populations are more or less mentally tough than others as to date mental toughness as a concept is not capable of being scientifically measured or assessed (Middleton *et al.*, 2003). It is more important to accept that mental toughness may well be subtly different in how it is perceived by different populations in terms of the characteristics that are required depending on the situational circumstances and what conditions people need to endure in order to survive or win through. In the case of adventurers / explorers this means literally looking after ones own life and in the case of elite sportsmen/ women it means being able to perform and achieve medals at the very highest level.

Finally, the investigation did have its strengths but also had limitations. Such issues will be discussed in the final chapter concerned with critical review and evaluation.

CHAPTER 7

CRITICAL REVIEW AND EVALUATION

7.1 Reflections of 'An investigation into perceptions of Mental Toughness of Adventure/ Explorers, Elite Athletes and Elite Coaches'

This chapter attempts to critically review and evaluate the investigation. Criteria for evaluation will be judgements associated with the adequacy of the research process in terms of the chosen method and methodology, the credibility of the study, the emergent findings and potential limitations. Given the provision of research critique and evaluation is considered to involve both the strengths and the limitations of research endeavour the author will attempt to provide a balanced review.

7.2 An overview of the evaluation of the research investigation

Table 7.1 provides a summary of the evaluation of the research method, methodology and consideration of aspects of trustworthiness within the investigation.

Overall, the investigation is deemed to have fully satisfied its major aim and objectives originally set out. It has provided what has been desperately lacking in mental toughness research; a basis for three discrete theoretical models which seem to be contextually driven and well grounded in their conceptual development for different homogeneous populations. By using an alternative method and combined with complimentary forms of data analysis (IPA and EGT), the findings offer a re-interpretation and conceptualisation of what mental toughness is to challenge previous research. It basically shows the strengths of utilising a phenomenological approach to understanding perceptions of mental toughness that generates more individual interpretation in more diverse manner than previous work. As a result, mental toughness needs to be considered as an idiosyncratic concept initially, which is capable of being interpreted differently, although at an abstract level it may offer similar conceptual characteristics that people may well be able to relate to.

Research Evaluation Issue	Perceived Strength	Perceived Limitation / Critique	Future Recommendation
Method – Phenomenological Interview	<p>Appropriate method for selected paradigm – Allowed diverse interpretations of MT to be explored</p> <p>Highly appropriate for generation of information rich data</p> <p>Gained 1st person perspective using 'lived experience' as a data source</p> <p>Unique method to compliment existing research work in Mental toughness (Fourie and Potgieter, 2001; Jones <i>et al.</i>, 2002; Middleton <i>et al.</i>, 2004; Bull <i>et al.</i>, 2005)</p> <p>Extremely credible samples with high research integrity - > 90-95% medal winners in EC & EA samples. Peer recognised Adventurers & Explorers.</p> <p>No prior research into MT of Adventure/ Explorer sample</p>	<p>Too many interviews for complete IPA analysis. Generation of excessive data. Balance required in combining IPA method and EGT in sampling procedures</p> <p>Extremely time consuming in conducting interviews, transcriptions and member checking documentation</p> <p>Massive data base generated which produced information overload which hampered initial analysis</p> <p>Interview technique needs to consider combining phenomenological inquiry with the need for further conceptual sampling. During the course of single interviews this is problematic.</p> <p>Lack of gender balance in samples to consider emergent intra – individual differences in MT perceptions</p> <p>Reliant on retrospective recall and potential accuracy of event detail on personal experience</p>	<p>Conduct fewer interviews and conduct prolonged engagement to explore meaningful content and saturation.</p> <p>Needed to carefully consider further exploration of MT concepts and emergent dimensions – not fully explored (e.g. transferability, gender differences)</p> <p>Follow up interviews to explore selective coding of concepts and categories is required</p> <p>Conduct initial IPA interviews with selective follow ups to explore possible conceptual and categorical developments with EGT analysis</p> <p>EGT and IPA approaches restricted sample selection due to decision not to forward hypotheses. More purposive sampling in IPA to consider emergent gender differences or additional sampling in EGT analysis in future.</p> <p>Restrict reflection of personal experiences to less than a couple of years to increase vividness and accuracy of recall</p>
Methodology Naturalistic Inquiry (Emergent Grounded Theory / IPA Integration)	<p>Unique, given the combined attempt to merge two major approaches. IPA provided meaningful analysis which attempted to increase credibility which was</p>	<p>Conflict between EGT and IPA when issue of saturation was required. A need for selective analysis of data. IPA not concerned with potential saturation but</p>	<p>Seriously consider the impact of combining two approaches and restrict the sample sizes Without making hypotheses sample 10 - 12 in each sample and conduct multiple</p>

<p>Cont,</p> <p>Methodology Naturalistic Inquiry (Emergent Grounded Theory / IPA Integration</p>	<p>lost in a lack of triangulation of data collection and analysis.</p> <p>Allowed for unique diversification of perceptions of MT to emerge (key code and conceptual material for analysis)</p> <p>New approach to compliment existing research intent on providing qualitative explanations of MT</p> <p>IPA applied in detail to fully explore conceptual /categorical developments to support EGT.</p> <p>Provides theoretical underpinning for MT conceptualisation</p>	<p>intent on extraction of meaning.</p> <p>Multiple method data collection not adopted in EGT (Triangulation of methods)</p> <p>Triangulation of data coding and analysis not performed. EGT requires such procedures for trustworthiness / credibility</p> <p>Individual meanings may be so diverse that they are only owned by the participant (IPA) and the meanings are only relative to them alone and not transferable to others.</p>	<p>Interviews to explore conceptualisation of MT.</p> <p>Such procedures may allow gendered characteristics to emerge.</p> <p>Conduct more selective samples from specific disciplines as opposed to diverse sampling. Greater purposive sampling may provide unique sport / discipline specific detail of MT conceptualisation.</p>
<p>Trustworthiness of Findings</p>	<p>Achievement of multiple credibility criteria to ensure trustworthiness (referential adequacy, member checking , provision of thick description / documentation – database)</p> <p>Transferability & fittingness achieved</p>	<p>Need for greater triangulation</p> <p>Peer de-briefing in concept and category formation would have been useful.</p>	<p>More prolonged engagement & multiple interviews</p> <p>Triangulation included</p> <p>Peer de-briefing included</p>

Table 7. 1 Summary of Strengths, Limitations and Recommendations of the current study

To accept that mental toughness enjoys total conceptual consensus has to be treated with caution. Major categories from previous studies are supported, but findings only offer partial support for other aspects (see Table 7.2). On a deeper level, findings present diverse evidence to suggest that mental toughness is perceived differently by individuals and by different populations. Within all previous work there is also a

diversity of how each author defines such concepts due to their varied conceptual composition.

Jones <i>et al.</i> (2002) Attribute / Category	Support Full / Partial/ No	Middleton <i>et al.</i> (2004) Category	Support Full / Partial/ No	Bull <i>et al.</i> (2005)	Support Full / Partial/ No
Unshakeable belief in the ability to achieve competition goals Self Belief, Desire & Motivation	F	Self Efficacy	F	Surviving setbacks / earning success/ determination Dedication and Commitment	F
Bouncing back from performance setbacks Dealing with competition related pressure (Internal)	F	Mental Self Concept (views oneself as being able to deal with adversity)	F	Confidence/ dealing with doubts/ having self focus Self Belief	F
Remaining fully focused on task in the face of distraction Focus (performance related)	F	Potential (Perceived ability to perform)	F	risk taking/ decision making Coping with Pressure -thriving on competition	F P
Regaining psychological control following unexpected / uncontrollable events Dealing with competition related pressure (external events)	F	Task Specific Attention	F	Self reflection / quality preparation/ setting challenging targets Personal Responsibility	P P
Pushing back the boundaries of physical & emotional pain/ distress Dealing with physical and emotional pain	F	Perseverance	P		
Remaining focused despite personal life distractions Focus (Lifestyle)	P	Task Familiarity	N		
Thriving on the pressure of competition Dealing with competition related pressure	P	Personal Bests (Internal Drive to achieve)	P		

Unshakeable Self belief that you possess unique qualities and abilities that make you better than opponents Self Belief -	F	Task Value (Importance of task completion)	N		
Having an insatiable desire and internalised motive for success Desire and Motivation	F	Goal Commitment	P		
Accepting competition anxiety is inevitable but knowing you can cope with it Dealing with competition pressure - Internal	P	Positivity (Staying positive when faced with adversity)	P		
Switching a sport focus on and off as required Focus Performance	P	Stress Minimisation (Emotional Control)	F		
		Positive Comparisons	N		

Table 7.2 Support for previous studies from the current findings

On a category and conceptual level this study offers support for previous work but when the findings are examined in more detail (at a deeper level), there is greater disparity of findings in relation to previous work. For example, the 6 or 7 major categories within each sample were supported by between 16-24 major concepts and 78-126 key code themes. The findings alert the researcher to the fact that there is enormous individual variation as to the perceived differences on an individual level as to what people think mental toughness is. Such differences are somewhat clouded and generalised when conceptual and category convergence is performed. Previous research has failed to acknowledge such potential differences exist.

The evaluation of the investigation in terms of method, methodology and trustworthiness is summarised in Table 7.1. A particular strength of the study was to adopt a phenomenological method and its value in the provision of rich and detailed narrative for data analysis. It allowed personal perceptions of mental toughness from the lived experience to be shared and subjective interpretations of the concept to provide a meaningful foundation for conceptual analysis to follow.

The approach allows perceptions of different experiences (within samples) to be offered free from objectivity and prescribed reality. The data was 'real' for the people who provided it and in many ways the reality was that mental toughness meant different things to each individual. Even though conceptual analysis linked related themes there was no uniform definition that suited each individual perception of mental toughness. This point fully endorses the finding of Gould *et al.* (2002).

Adventure/ explorers needed to consider life risk whilst elite athletes and coaches were dedicated to the pursuit of medals and performance excellence. The strength of the phenomenological approach meant that individual perceptions based on personal experience and the nature of the social situation that one lives in were predominantly responsible for how people explained the concept of mental toughness. In short, ones perception of mental toughness may well be environmentally influenced and have contextual variation attached to it.

The phenomenological approach discovered new insights into what constitutes mental toughness based on individual variation and examples include the need to consider that people view failure as an important experience in being mentally tough, that dealing with setbacks is crucial to becoming tougher, having absolute focus on task is important but the need to be able to deal effectively with external distractions is equally important when not on task. It also indicated that mental toughness is linked

with a perception of being physically tough enough to cope with demands of the task and mental toughness has situational considerations in that people perceive that training and lifestyle commitments should be included in what mental toughness is all about. The fact that the conceptual framework of the adventurer/ explorer sample differs to the Elite Coach/ Athlete frameworks demonstrates that perceptions differ due to the contextual requirements. Such material provides a fresh research perspective compared to how it has been previously explained and strongly advocates that such a phenomenon is best explained from within an 'insiders' perspective. The sheer diversity of individual interpretation which is not reported in previous work is evident within these findings and this is largely due to the choice of the phenomenological interview which captures such idiosyncratic perceptions. The approach was well justified as it explored the meanings attached to mental toughness by individuals within each discrete cohort without offering any preconceived biases or assumptions of the researcher. The contribution of the phenomenological analysis within the establishment of the emergent key coded themes was crucial to the provision of a solid conceptual framework. It was also important in providing meaningful connections between concepts and categories in later stages of theory development.

The adoption of such an alternative method had its strengths outlined in Table 7.1, but also involved some limitations which need to be acknowledged. The method is extremely time consuming and generates extreme amounts of data that requires transcription, coding, member checking and then analysis. On reflection, the integration of EGT within data analysis provided problems within theoretical sampling and the pursuit of data saturation. Using phenomenological techniques to collect and analyse data and attempting to combine such an approach within grounded

theory conceptualisation proved problematic. The search for personal meaning and individual interpretation justified the IPA approach, but in hindsight, a more astute approach may have been to select either a full grounded theory approach with semi structured interviews and prolonged engagement or a pure phenomenological study which merely focused on salient emergent themes and categories. To combine both was rather ambitious and fraught with methodological difficulty. However, without being too negative, the researcher feels that the initial IPA analysis did provide meaningful data which resulted in information rich emergent key coded themes, concepts and categories. These provided the foundation on which the conceptualisation of the EGT was based upon.

The use of largely single interviews introduced another potential limitation. Single interview techniques do provide information rich data, but the study lacked selective follow up interviews to assist in complete theoretical sampling and further detailed investigation into concept and category development. Phenomenological interviews may involve prolonged engagement and such practice would have assisted in theoretical sampling but were not performed enough due to restrictions on access to participants.

The major limitations related to credibility were associated with triangulation issues. Intensive triangulation procedures using additional researchers was not conducted and needed to be to confirm emergent conceptual/ category development. Project supervisors were consulted on emergent thematic structure but this could not be considered credible, only confirmatory. Total independent triangulation which considered emergent codes, concepts and categories would be required for full credibility, similar to the procedures employed by Gould *et al.* (1991, 1993a, 1996).

Additionally, dependability within the findings may be questioned given it rejected multiple methods of data collection in favour of a single method phenomenological interview design. Grounded theory analysis does accommodate for multiple methods to allow emergent theory to emerge and develop and to achieve more consistency and credibility via triangulation techniques. However, the researcher decided that single case interviews with selective follow ups would satisfy data collection and analysis purposes and a rationale was provided. The researcher does acknowledge that prolonged participation was difficult with highly selective samples and it was only partially achieved. This resulted in time commitment to additional sampling being a serious limitation. Accessing adventure/ explorer, elite coach and elite athlete sample groups is extremely difficult as all three populations have little free time to devote to assisting in research work. The problem being that direct interview time is only part of the process and time commitment is significantly extended due to transcript /member checking procedures. Such requirements make potential participants very difficult to access and then convince the project is worthwhile.

Many problematic issues surfaced during the investigation and particularly in the research process of data collection. Coding and theory development required the researcher to question and make important judgements in order for the emergent theory to evolve successfully. Some remain problematic and debate continues as to how grounded theory should be applied, as different approaches from the originators of the theory (Glaser and Strauss, 1967) emerged. One major decision was to decide which approach would be adopted based on methodological arguments of both authors in how grounded theory should be applied. It was decided to follow the approach outlined and developed by Glaser (1992) who emphatically stresses that the

research problem itself is discovered through emergence as a natural by product of open coding, theoretical sampling, and constant comparison.

IPA was conducted within the initial open coding phase to enable key coded themes to be identified. With a restriction on prolonged engagement theoretical sampling procedures remain somewhat limited and ideally more follow up interviews should have been conducted with selective participants to explore concepts further.

The coding process itself provided problematic issues. Initially micro line by line analysis was applied and this generated massive amounts of data and became overwhelming for the researcher. There was an overemphasis on extracting too much detail from the data by employing IPA coding techniques which involved multi-coding within prose, and such practice led to investigation confusion. IPA on multiple interviews in an attempt to generate an emergent theory is far too demanding in terms of time allocation and this created a major problem when analysing the data. Following the coding process and subsequent IPA to establish key point themes, the researcher questioned exactly how many key points were required before allowing a concept to emerge? This basically required the issue of substantiation to be critically questioned. Grounded theory guidelines seem not to provide the reader with advice on such issues. The researcher questioned the quantity versus quality issue in what signified a substantive code or concept. Is a code or concept awarded substantive status if it is continually reinforced or can a code or concept be as substantive if it has more meaningful content but less numerical support in terms of data duplication? This was a particularly difficult aspect of theory development that required careful consideration.

When considering constant comparison processes within the axial coding phase it was extremely difficult to avoid being drawn into conceptual thinking based on updated

literature available. During the write up phase a research paper was published by Jones *et al.* (2002) investigating Mental Toughness with Elite sports performers. Basically the findings had to be 'stored away' or 'bracketed' until data analysis was more or less complete. Subsequently, findings did support some of Jones *et al.*'s. (2002) findings, but there may have been a danger that such work could sway the theoretical direction of the study, if the researcher allowed the conceptual findings to influence theoretical development.

The final issue which emerged within the grounded theory process concerned one of data saturation. Given sample imbalance was a feature concerning the researcher and the interviews were yielding only marginal returns in terms of fresh data the researcher was uncertain as to when to conclude the analysis. The adventure/ explorer sample was concluded ten interviews before both the athlete and coach samples and the researcher questioned whether there was enough data collected. The near saturation state occurred in the elite coach sample when only eight female coaches had been interviewed. The researcher asked the question 'Was the investigation about an emergent grounded theory of mental toughness or was it concerned with a prior agenda related to male/ female perception differences?' Given the research question was principally concerned with the former issue data collection was concluded, thereby leaving sample imbalances. Subsequently any such differences should form the focus of future investigation with additional cumulative sampling.

One important limitation that needs to be addressed when conducting phenomenological in-depth interview techniques which require retrospective recall is the problem of possible memory bias / distortion. Researchers should be cognisant of the potential for memory distortion if retrospective recall is conducted and should

attempt to relate the experience to more recent events to avoid distortion due to extended time lapse, thereby questioning the trustworthiness of the data.

Evidence does suggest however, that real life events that are meaningful and highly emotional / arousal inducing, (such as major competitions when medal are won, or ones life is threatened in the outdoors) are retained in memory with vividness that allows the participant to recall information related to the event with high reliability and accuracy (Christianson, 1992). The present study allowed the participant free choice to recall events which provided data for analysis and maybe should have established a consistent retrospective period to reduce the possibility of distortion due to memory lapses.

A major strength of the study and the adoption of the chosen method is the high degree of trustworthiness that was achieved throughout the study. The interviews and the meticulous coding procedures which supported the transcriptions and member checking process provide a high degree of research credibility. Previous work has outlined how the study satisfied credibility, transferability, confirmability and fittingness and the researcher believes the limitations of study are outweighed by strengths of the research process and the unique richness of the data collected and analysed. The major limitation with regards trustworthiness would be the lack of triangulation within the data coding and analysis procedures. However, given the adoption of IPA and stringent member checking process, the researcher feels that credibility was achieved to compensate for the lack of such procedures.

The evaluation of the investigation also needs to address the research findings and the potential applicability of such work. Table 7.3 shows the strengths, limitations and recommendations for each.

<p>Research Findings</p> <p>STRENGTHS</p> <p>Findings advance current understanding of MT showing the need to consider individual diversity within initial interpretation of MT even though conceptual convergence is possible at a more abstract level of analysis.</p> <p>Findings provide evidence of conceptual interaction of MT characteristics that show that single MT factors are unlikely to provide MT resilience.</p> <p>They provide a different set of characteristics to previous researchers such as the consideration of physical coping ability, training and situational toughness at category level (EC & EA samples). Also, the individual diversity in perceptions of MT at key code level provides evidence that MT is a capable of being perceived differently by each individual.</p> <p>Adventure / explorer category – concept EGT structure differs from EC & EA EGT structure (conceptualisation)</p>	<p>EGT of 3 discrete samples using IPA method</p> <p>LIMITATIONS</p> <p>Only provides a substantive theoretical model of MT – more research required to consider a grand theory cannot be transferred to other contextual situations and applied.</p> <p>No evidence of possible differences in gender, age, culture factors.</p> <p>The emergent super-ordinate categories only provide a general indication of the major characteristics of MT on a fairly broad level. Similar to existing work in the area.</p> <p>The findings show that mental toughness may be easily explained through broad conceptual labels. However, deeper analysis is warranted.</p> <p>Mental toughness to a certain extent is contextually driven and such findings deserve further research interest.</p>	<p>RECOMMENDATIONS</p> <p>Further data collection to address sample imbalance to consider possible gender similarities/ differences</p> <p>MT should be considered as a complex phenomenon. It is multi- dimensional and it's make up may consist of a varied assortment of psychological factors. There seems to be little consistency in how it is explained when different populations are investigated at a micro level.</p> <p>More IPA studies in sports specific disciplines (focused research) such as Bull <i>et al.</i> (2005) in cricket</p>
<p>Applicability – relevance to Real World Application</p> <p>STRENGTHS</p> <p>Has applied relevance in providing a conceptual model to understand the major MT characteristics within each discipline.</p> <p>May provide a model for coaches and athletes to identify factors which are capable of being developed (taught) as opposed to inherited (caught).</p>	<p>LIMITATIONS</p> <p>Limited to specific populations – cross transfer to other groups needs to be treated with caution.</p> <p>Only provides evidence of what Mental Toughness is perceived as by different populations. Individual diversity at a micro level needs to be understood and idiographic profiles need to be considered.</p>	<p>RECOMMENDATIONS</p> <p>Offer findings to sample populations for consideration and peer review for confirmation of acceptance to cement real world relationship</p>

<p>Can provide a guideline to agencies who consider mental toughness to be a prerequisite for involvement in their profession. Outdoor Adventure / Exploration / Professional Sporting Bodies.</p> <p>Advancement of knowledge and Understanding of 'Mental Toughness' from a scientific perspective</p>	<p>Mental toughness may well have discipline specific variation. Using generic samples may not be truly reflective of single discipline Mental toughness requirements (e.g. Biathlon, Curling, Downhill / Slalom Skiing etc).</p>	
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Table 7.3 Summary of Strengths, Limitations and Recommendations of the current study related to findings and applicability.

The most striking finding being, how diverse perceptions of mental toughness are when a phenomenological approach is adopted within the research process. Such diversification is dramatically reduced as conceptualisation emerges and becomes more abstract. Using a phenomenological approach provides evidence that mental toughness is capable of being perceived differently by individuals and certain characteristics which are perceived important for one person may not register with another.

Given such findings it has to be considered to be explained in terms of having multiple reality existence and idiosyncratic meaning to each person. It may mean one thing to an adventurer but something different to an elite athlete or elite coach. It may well also be perceived to be similar but such perceptions are influenced by ones personal experiences and are somewhat unique.

The findings offer what must be considered a need to re- evaluate how mental toughness is perceived and explained by individuals and challenge existing conceptualisations of the phenomenon provided by previous researchers (Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*, 2005), based on the fact that at category level they are too generalised and fail to account for individual differences on a micro

level. Given the nature of mental toughness and the adoption of an 'insider perspective' the findings provide evidence that mental toughness is well capable of being re-interpreted in many different ways that challenges existing research.

Providing broad conceptual models may not be the most effective way to understanding very complex phenomena. By doing so it only provides a very general understanding of a multi-dimensional psychological characteristic.

The emergent categories within the current study only really provide a general indication of the major characteristics and the reader is advised to seek out supporting concepts for more sensitive detail. For example, using setbacks and failure as a positive learning experience and accepting that it is an inherent characteristic of what being mentally tough is all about because perceptions indicate that people become stronger if they effectively deal with failure.

Figure 7.1 shows the degree of diversification of mental toughness achieved at different stages of the research process with extremely high degrees of variation being offered within preliminary phases of IPA coding and key code thematic emergence.

Adventure / Exploration	Elite Athlete	Elite Coach
Safety & Survival	Training and Situational Toughness	Training and Situational Demands
Physical Coping Ability	Physical Coping Ability	Physical Coping Ability
Coping with Stress and Anxiety	Dealing with Event Pressure	Dealing with Event Pressure
Knowing Oneself	Self Confidence and Belief	Self Confidence and Belief
Coping with Success & Failure	Commitment & Determination	Motivation and Commitment
Undivided Attention	Effective Mental Application	Effective Mental Application
	Self Control and Discipline	

Table 7.4 Important emergent categories related to perceptions of mental toughness for the 3 distinct sample groups.



Figure 7.1 - The degree of diversification of perceptions of mental toughness within 3 discrete samples

This provides reasonable justification for the employment of IPA within the research design. The findings demonstrate diverse differences on an individual level, yet when data is conceptualised it gravitates into theoretical categories which include numerous related themes. Table 7.4 shows the major emergent categories from the study.

Although providing a useful indication of the general concepts which contribute to mental toughness it lacks the meaningful and detailed conceptual data which provides the structure to such categories. This is similar to how existing research evidence is portrayed and explained which provides no indication of differences at deeper levels of analysis. Findings suggest that there is a definite need to consider a possible re-interpretation of mental toughness at deeper levels of analysis than what is being presented at category level by leading researchers (Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*, 2005). The adoption of a phenomenological approach within a grounded theory framework has provided more meaningful and insightful indicators to the characteristics which contribute to understanding what mental toughness is.

Additionally, further research should focus on the primary emergent concepts and categories and identify which of them are capable of being taught and trained as opposed to caught and inherited. It is not known how long it takes to develop mental toughness, but on a cautionary note it should be viewed as a long term process that requires on-going refinement and nurturing. By doing so, people may well equip themselves better within their psychological development, and as a result it may provide more opportunity for them to achieve their personal ambitions and lifetime objectives.

7.3 Potential applicability of findings

An additional strength of the investigation is that findings have potential applicability. Practitioners working with performers in an attempt to achieve mental toughness need to be fully appreciative of the important psychological characteristics that underpin its existence. Table 7.3 outlines potential applicability of the findings in that they provide a appealing 'first person' interpretation of what people consider mental toughness to be from three perspectives. It has obvious relevance to the applied setting from within each contextual discipline. It provides adventure/ exploration personnel who are responsible for training and education of survival in the outdoors with a detailed conceptual model to inform their teaching and explanations of mental toughness to interested colleagues and students. It also provides active participants with direct examples of what constitutes mental toughness from recognised 'mentally tough' personnel in the field and identifies specific psychological characteristics that should be considered as targets for personal development/ improvement.

The EGT models based on solid conceptual foundations provide practitioners the mental toughness criteria to identify potential mentally tough performers in talent identification and development programmes and also for individuals to consider personal improvements in becoming mentally tougher for life experiences. The findings have practical implications for elite coaches and athletes who are seeking to improve mental toughness, in that they can now base their knowledge of what the elusive concept is on credible evidence (provided by proven winners and survivors) as opposed to more distant objective explanations which are somewhat unreliable. The categories are supported by important psychological concepts and key coded themes which have been outlined in detail within the study. Those interested in

designing programmes to enhance mental toughness may well consider focusing on these characteristics.

The potential applicability is appealing but is limited to specific populations and potential cross transfer to other contexts needs to be treated with caution as contextual transfer may not directly be acceptable or warranted. Given the idiosyncratic nature of phenomenological interpretative analysis cross transfer is not recommended.

A useful applied exercise would be to offer the findings back to each specific cohort and have them evaluate the findings to further reinforce and verify the trustworthiness of the data. Such external verification procedures would serve to confirm the potential applicability of the work.

Overall, the investigation was considered to be extremely valuable in contributing to the existing knowledge on mental toughness and provided a unique approach which employed phenomenological method with emergent grounded theory analysis. This in itself provides the final limitation. The interview method was extremely suitable for the purpose of generating information rich data, but the researcher feels that emergent grounded theory analysis is in some ways restrictive in allowing deep meaningful data to be disguised in later phases of the process (generation of major concepts and central core categories). It is difficult to keep individual perceptions and personal meanings distinct whilst also seeking conceptual relationships on a more abstract level. The author continues to wrestle with such methodological concerns within the implementation of emergent grounded theory. A core category is rather abstract descriptor which encompasses many related and interlinked concepts, i.e. the psycho-physical ability and self sufficiency to survive (adventurer / explorer sample) and medal winning psycho-physical ability (elite coach/ elite athlete samples). In retrospect and in critical evaluation of the phenomenological method and the use of

emergent grounded theory analysis, the author feels that in certain stages of grounded theory analysis (key point coding / conceptual emergence) methodological compatibility is achieved that allows phenomenological data to be fully explored. However, the investigation required additional interviews (prolonged engagement) to theoretically sample emergent concepts which presented avenues of potential research interest (perceptions of failure, pain management, handling critical moments under pressure, extending oneself beyond the comfort zone etc). The generation of wider conceptual clusters, although distinctly owned by the population that provides it, in many ways disguises the essence of the true data, the individual meanings attached to personal experiences by all the respondents. To fully consider what meanings are attached to the specific headings and key codes the reader is required to revisit the original data source and absorb its true meaning in the context of its delivery.

7.4 Variations in perceptions of Mental Toughness

Given the emphasis on phenomenological method which allows interpretative differences in relation to how individuals explain concepts such as mental toughness, the findings did provide some subtle variations of how people explain and describe mental toughness which challenge general findings. Such variations are important if individual meaning is to be fully explored. Table 7.5 includes examples of alternative interpretations of the concept which shows that selective participants hold slightly different perceptions of the concept.

Alternative Label	Direct Quotation / Source of data	IPA Interpretation
Moral Courage	<i>I don't particularly admire or use mental toughness as much as I admire moral courage. That I do admire and I find it very attractive. Having the conviction to make important decisions based on whether it is right not only for me but for others close to you. When on Everest, high up on the south col, I had to make a life threatening decision and it required</i>	MT has moral connotations in that adventure involves making important decisions which have to include close family members and potential impact on them. MT needs to consider emotional consequences for others related to the participant. Such interpretation is not frequently quoted but has meaning to this participant due to the potential negative

	<p><i>moral courage as I thought about my mother who I felt I may never ever see again if it was the wrong one.</i></p> <p>A 19 female, Climber</p>	<p>Impact on others. It includes having a sense of right and wrong based on moral judgments.</p>
Mental Strength	<p><i>Mental strength probably... In terms of universal toughness. It is not just mental toughness is it? Mental strength is the one that encompasses discipline, control and toughness. The word that describes most of that.</i></p> <p>EA15 -female, Olympic - Badminton Bronze medallist 2000</p> <p><i>Ok, It's probably not a term that I would have used, but I guess I would use mental strength or inner strength.</i></p> <p>EA 18 -female, Commonwealth Bronze Medallist 2002 - Cycling</p>	<p>The participant views mental strength as a holistic term which includes more than one psychological characteristic. It requires an all encompassing term to fully explain the possible breadth of the definition.</p> <p>The implication that it is inner directed strength which provides the element of toughness. This implies it is a natural feature that people need to tap into and apply when needed.</p>
Mental Resilience	<p><i>The term Mental Toughness is one that I'm familiar with in hockey, but I prefer to use the term mental resilience. I think that has a different connotation to it. I think the whole word tough, sometimes makes you think of absolute strength and it gives you a picture of someone who wanders around and looks strong. Whereas, I think the term mental resilience to me, is about the ability to cope with lots of things and the ability to keep going and to bounce back and I think that gives me a more preferable picture, than the term mental toughness.</i></p> <p>EC14- female, Field Hockey</p> <p><i>What we have to be careful of is asking what one's definition of toughness is? I regard toughness rather like you regard the toughness of steel, it's a resilience. I think the tough people are those who have resilience, who have a sense for people around them and who have a sense of compassion, and that is what builds real toughness.</i></p> <p>A2 -male, Experienced Mountaineer</p>	<p>The participant related MT with images of toughness and pure physical strength which are considered too narrow. In preference the coach views mental resilience as a more appropriate alternative as it encompasses a combination of important factors that need to be considered (coping ability, dealing with setbacks etc). It requires a term that encompasses many different qualities rather than merely being physically tough or appearing to be tough in the form of an image.</p> <p>The participant perceives it to be more durable and it assumes more of a collective meaning as opposed to an independent nature. It implies there may well be multiple meanings attached to the term.</p>
Mental Resistance	<p><i>I'm talking about the sort of mental resistance to the internal wishes to give in.</i></p> <p>A 6, male -Polar Explorer</p>	<p>The perception that one has resistance to personal negativity and the ability to not accept failure when faced with adversity.</p>

Perseverance	<p><i>I think perseverance. I tend to do things and if I start to do something I never give up, that's the type of thing when I was doing the JG training programme. We did the work and we pushed and pushed and did the work and we achieved in the end and that was perseverance.</i></p> <p>EA4 -female, Olympic Silver Medallist -Sydney - Rowing</p>	The perception that adherence to the task once committed and extending oneself to further achieve the difficult goal demands perseverance. It assumes more endurance qualities than immediate effects.
Uncompromising	<p><i>Basically, I have heard the word and the term mental toughness. However, for me I've heard better words, that I would describe myself as, which would be mentally strong, uncompromising and driven. So, mental toughness to me is more of an adjective of all these other things that actually characterize it.</i></p> <p>EA 32-female, Ex world champion slalom canoeist / Olympic athlete.</p>	A perception that MT is an all encompassing adjective for a collection of psychological and behavioural characteristics. Another attempt to offer an explanation which includes a combination of characteristics.
Stickability	<p><i>I wouldn't go along to any of the people I am training, or working with, saying they have got to be mentally tough. I would sometimes say "you have got to stick at it, keep sticking to your guns and it will come right". I always take the attitude if you are at the bottom of a wave there is only one way to go and that is up, so "stick at it, and believe in yourself, come on you can do this". So stickability is the term I often use. EC2-male - International Equestrian Coach 1996 / 2000 Olympic games</i></p>	The perception that a person has to be able to endure the task to completion despite difficulty. The stickability is fuelled by ones self belief
Mental Focus	<p><i>To me when you use the term mental toughness, it has a little bit of a sort of masculine or aggressive type of connotation to it. I suppose we would tend to use with our swimmers a slightly different phrase, we would probably use mental focus. Now to me mental focus is a very key element of that, so I would probably use mental focus if I was talking to my swimmers about that, rather than actually using mental toughness. EC 28-male, Swimming.</i></p>	<p>A perception that MT has gender connotations in that it provides stereotypical images of aggressiveness which may well not be totally acceptable when considering the swimming discipline.</p> <p>The coach views MT to be more appropriately linked with attention and concentration and these are the important factors within MT.</p>
Stubborn	<p><i>I mean just like everything I do. I am so stubborn and so like stuck in my ways. So I think its being stubborn and defiant in getting what you want. EA 31 -female, Swimming</i></p> <p><i>I mean how do you define toughness it can be a lot of things, it could be confidence it could be stubbornness. EC 1- male, Basketball</i></p>	<p>A perception that having a disposition of being inflexible and consistent behaviour which is unbending and linked to reaching ones goal. It implies that it may also require disagreeing with others in order to get what one wants.</p> <p>The implication that MT is capable of being explained and interpreted in many different ways, which all may be plausible and meaningful.</p>

Table 7.5 Examples of variations in perceptions of Mental Toughness from within the 3 samples

The alternative explanations in Table 7.5 above show how selective participants prefer to interpret mental toughness. The examples include characteristics which are more related to trait or dispositional aspects of personality and behaviour (courage, resilience, perseverance, stubbornness and having an uncompromising nature) as opposed to the effective application of mental skills (coping ability and mental focus). It seems that selective alternative interpretations also assume a combination of psychological characteristics within their label in a similar way to mental toughness. Quite different explanations such as 'moral courage' are rare and related to specific experiences which have personal meanings attached to them. They may assume gender variations and deserve further research attention within discipline specific experiences such as mountaineering. Overall, apart from the different descriptive labels the examples include characteristics outlined within the findings linked with dealing with physical coping, self determination, commitment, drive, resilience and being mentally focused. This indicates the difference is within the semantic label rather than the characteristics that are assumed within a label. It is noticeable that some people label mental toughness differently, but basically similar factors are included within its make up and each person has a preference for some over others. The provision of an all encompassing definition is therefore very problematic and somewhat unwarranted.

7.5 Future Research Directions

Based on the findings, additional lines of research are warranted. Firstly, since this study did not include a comparison group of less successful elite athletes and coaches of similar experience (having worked to medal but failed) studying such a group of comparison athletes would help determine how such individuals perceptions of mental toughness might have differed from their more successful counterparts. Secondly, the

emergent theories require testing and research support to establish the theory may focus on more selective samples through discipline specific studies to develop and expand the theory. Thirdly, the research has only provided grounded theory based on individual perceptions of '*what mental toughness is*' not how it is developed. Future research should attempt to identify characteristics capable of being developed based on the conceptual models which underpin the theory. But, it is not clearly understood how long it takes to develop characteristics of mental toughness or whether it is transferable to different life situations e.g. are mentally tough athletes / coaches / adventurers consistent across different aspects of their lifestyles? For example, would a mentally tough athlete be a mentally tough in dealing with a relationship breakdown, a life threatening illness, losing their job or suffering a career ending injury? Such questions have appealing research interest. This point was poignantly emphasised in Table 4.3 (p.102), by a highly acclaimed climber who felt that looking after his two seriously ill children was far tougher mentally than scaling Mount Everest.

Finally, the investigation only investigated three distinct sample groups and future research may well target more diverse samples. What does mental toughness mean and how is it perceived by people who are severely disabled, suffering terminal illness, those who suffer terrible social deprivation, people who are bereaved, who suffer from chronic addiction and those who work in difficult occupations such as paramedics, doctors, nurses and the armed forces? Do certain social situations require specific aspects of mental toughness more than others? Such research has appealing phenomenological attraction and it may well contribute to more of a 'grand theory' of mental toughness in the future in contrast what must be considered as substantive theory within the current investigation.

Overall, the study has been seen to successfully achieve its major aim and objectives. In doing so, the study advances existing attempts to explain the concept and presents a more theoretical and conceptual re-interpretation of the psychological phenomenon. This was achieved through the use of alternative methodology which allowed deep meaningful data to be collected, interpreted and analysed. To date, only Middleton *et al.* (2004) has offered an alternative theoretical model of mental toughness, and findings suggest that the present study provides an important development in mental toughness research due to its detailed theoretical and alternative methodological approach. It has proved that by employing different research methods, psychological perceptions of mental toughness differ and individual interpretation is extremely important to understand. Merely, accepting broad based category explanations of a complex psychological characteristic only serves to confound the multi-dimensional nature of the phenomenon. Previous authors offer preliminary definitions of the concept based on their investigations and these invariably differ (Jones *et al.*, 2002; Middleton *et al.*, 2004). To reduce the meaning of a psychological characteristic down to an all inclusive phrase which fully encapsulates what it is to each individual is not appropriate or warranted. Mental Toughness although extremely important is open to diverse ways of being explained and interpreted by people. Mental toughness is an extremely complex psychological global term which must cautiously be accepted as a rather abstract characteristic for a large collection of contributing psychological concepts. In similar ways this study identified the 'psycho-physical self sufficiency to survive' within an adventure environment and the 'medal winning psycho-physical ability' to win medals within a sporting environment as global terms (core categories) which emerge from detailed conceptual analysis. In many ways such global terms only serve to provide cover to the deeper meaningful and diverse interpretations of the

phenomenon which operate at an individual level. As a result, this study although providing conceptual/ categorical support for existing work, demands that any further attempts to understand mental toughness employ research methods which allow for individual diversity of interpretation and explanation of such a multi-dimensional concept.

7.6 Summary

Mental toughness has attracted a number of qualitative research studies over the past five years and findings have demonstrated both shared consensus and diversification on potential contributory concepts and categories which support proposed theoretical frameworks (Jones *et al.*, 2002; Middleton *et al.*, 2004; Bull *et al.*, 2005).

Each study utilised a different methodological approach in attempt to explore the elusive concept and support for major categories consensus is ever increasing.

However, authors offer conflicting explanations in an attempt to provide all encompassing operational definitions of mental toughness and this only continues to confuse rather than clarify research understanding.

This research challenged previous work on the premise that the adoption of a unique research methodology would provide re-interpretation of mental toughness from within the naturalistic paradigm. It questions the need to offer such prescriptive definitions which narrow down the potential diversity of meaning attached to the psychological phenomenon. By adopting a phenomenological method and utilising a combined interpretative and grounded theory analysis the findings demonstrated evidence of massive individual diversity of meaning of what mental toughness means to participants within all samples. Such diversity was clouded when findings were assumed under collective conceptual headings which combined related themes.

When conceptual and category data is considered the findings show support for previous work. However, the author believes the real meaning attached to what mental toughness is to people lies beneath the broader category and conceptual frameworks. Such meaning is only understood when deeper levels of analysis are explored. These findings offer evidence that such diversification of personal meaning exists when alternative methodology is applied. As a result there will be no attempt to offer an all encompassing operational definition of what mental toughness is from within each of the three discrete samples.

Given the nature of the findings it is considered that the major aims and objectives of the study have been fully achieved. However, the research project, although having identified strengths also has research limitations and these are acknowledged, with important recommendations for future work being offered.

It seems that understanding what mental toughness is as a psychological phenomenon will continue to challenge sports psychologists as many questions remain unanswered.

The possibility of gender, age and cultural differences remain unexplored. Discipline specific studies as opposed to generic studies are limited, only being performed to date on two professional sports, cricket and football (Thelwell *et al.*, 2003; Bull *et al.*, 2005). Most recent research studies have targeted elite athlete samples but very few have targeted elite coaches and further research is required. Only recently have those who achieve medals been sampled (Middleton *et al.*, 2004), and non medallists and lower levels of participation may well form future samples.

The findings only attempt to explain what mental toughness means to participants and its potential make up. In doing so it may well provide important indicators of the potential to develop such characteristics from a mental training perspective or a programme of social and parental development. Research that attempts to understand

how socialisation practice develops mentally tough athletes has only recently been conducted (Gould *et al.*, 2002; Gould, 2005a, 2005b).

Overall, this study has advanced existing research understanding in the field in the provision of a detailed and well grounded theoretical framework for mental toughness, but also appeals for further qualitative studies which explore different methodologies within the naturalistic paradigm in an attempt to further explain the concept.

APPENDICES

Appendix A

Emergent concepts, supporting key point
codes and sources of data for the Adventure/
Explorer sample, n = 21 (17 m, 4 f)

Emergent concept	Supporting Codes (Key point)	Source of Data Adv/ explorer interviews including coded key point
Effective Planning and Goal Setting	Forward planning Being realistic Correct perception of challenge Taking the challenge Personal challenge Seeing the big picture Having a sense of perspective Having a sense of purpose The need to be adaptable and flexible when planning Having ambition Hitting your target	3,10 2 3,10,20 3,20 2,5,10,16 5, 7,20 15 15 5 2 2, 5, 16
Coping with Anxiety	Lack of fear Dealing with negative consequences Combating worry about oneself Combating worry about others Control of fear Dealing with negative self talk Control thoughts about negative consequences Coping dealing with death	5,10,15, 10,11,15,21 2, 21 2,16 10,11,15,16,20,21 2,3,10,13,15,21 10,11,15,16,20,21 2,3,10,13,15,20,21
Effective Decision Making	Effective decision making Making decisions under pressure Wisdom from experience Making joint decisions under pressure Patience in Decision making	1,2,4,7,10,15,16, 19 3,18,19 1,2,7,10 10,16,19 7,15,16,20,21
Self Confidence and Self Belief	Self confidence Positive self talk Having self belief	1,2,3,4,5,8,9,10,13,16,18,19,20 19 2,5
Coping with Stress Situations	Composure under pressure Dealing with prolonged pressure Tolerance of others Mental preparation Dealing with pressure from colleagues Using humour to reduce pressure Chunking to lessen the burden	2,3,7,9,10,13,14,15,16,17,20,21 2,3,4,7,10,13,15,16,17,18,19,20,21 10,16 2,3,10,13,16,17,20,21 16 20
Self Control	Self Control Patience Emotional control Dealing with death Dealing with ego Being unemotional Dealing with anger Coping with elation Emotional drive	2,7,10,16,18,21 3,21 5,7,15 2,7,10,15,21 2,5,7,10,21 10 10 10 5

Physical Fitness	Supreme fitness /physical state Physical / mental link	2,4,6,9,10,13,7,16,20,21 2,3,19
Coping with Negative Low Arousal	Handling complacency Combatting boredom	5,10,15,20 10,17,21
Ability to Suffer	Ability to suffer Mental reserve Ability to recharge Combatting mental drainage Ability to handle sleep deprivation	5,6,8,9,10,13,14,15,16,17,19,20,21 2,4,5,8,10 2,3,10,15,16,17 2,3,10,20,21 2,10,20,21
Risk Assessment	Necessary risk taking Avoiding mental slips Knowing your limits Risk assessment Handling uncertainty Common sense	7,10,20,21 7,10,20 2,4,5,6,15,16 7,16,20,21 2,3,6,8,14,15,20,21 1,2,3,4
Physical Coping	Coping with physical discomfort Coping with Altitude effects Fighting spirit	2,3,4,6,8,10,11,12,13,14,15,16,20,21 2,3,7,10,16,19,20,21 6,15,17
Independence & Personal Responsibility	Being alone Personal responsibility Independence Being assertive Being self sufficient Being single minded	10,15,17,20 20,21 2,3,4,9,12,13,14 20,21 2,6,8,9,10,12,14,15,16,17,18,20,21 3,6,8,10,12,13,15,21
Self Awareness	Being Balanced Knowing oneself Inner awareness	1,2,4,8,12,13,16,20 2,4,5,8,10,13,17,19,20 2,15,16,20,21
Coping with Success	Handling success	21,
Dealing with Failure	Accepting failure Experiencing failure Perceived failure	5,13,16,18,19,20,21 2,3,5,7,9,10,13,16,17,20,21 2,3, 7,9,16
Dealing with External Distractions	Coping with external distractions Combatting homesickness	2,3,5,10,13,15,16,18,20 2,8,16
Full Attention on Task	Having full attention Mental readiness Dealing with the present	2,3,4,5,10,14,16,17,20,21 4,5,10,21 5,7,9,13,15,20,21

Appendix B

**Emergent concepts, supporting key point codes and
sources of data for the Elite Coach sample, n = 33**

(25 m, 8 f)

Emergent concept	Supporting Codes (Key point)	Source of Data Elite Coach Interviews including coded key point
Self Confidence	Self confidence Perception of ability Confidence in ability Confidence in training programme Confidence in coach Winning confidence Technical confidence Specific confidence	1,2,9,11,12,13,14,16,17,21,23,24,25,27,31,32,33 3,5,6,9,14,15,30, 2,3,9,12,13,16,17,20,23,24,30,32 23,30,32 23 6,8,32 13,20,23 32
Self Belief	Self Belief	1,13,17,20,21,25,32
Dedication and Commitment	Dedication Commitment Self Discipline	4,6,8, 6,8,17,27,30,32 4,27,30,32
Motivation and Desire	Self Motivation Drive and Desire Having the incentive Determined nature Wanting it badly enough Will to win Independent & responsible Staying motivated	4,8 27,31 20 2,4,8,10,12,13,19,20,24,28,30 13 4,10,13,23 3,4,5,8,10,12,14,22,23,28 20
Absolute Focus	Absolute focus Maintaining focus Having vision Consistent focus Staying clear headed Staying in the present Auto pilot Seeing the big picture	1,2,3,4,9,10,12,13,15,17,18,20,23,24,28,30, 1,3,5,19,23,28,31 8,13,17,20,23,24,30 1,3,5,13,20,23,31 2,8,10,13,23 2,20 2,28 17,20,24
Use of Mental Skills	Use of Positive self talk Use of powerful imagery Goal Setting Dealing with external distractions Effective Decision Making	17,20 20 12,20 3,8,12,13,15,20,21,24,31,32 2,15

Gaining the Mental Edge	Rising to the occasion Big occasion toughness Not giving anything away Being single minded Doing the job Being ruthless Killer instinct Hates losing Having a professional attitude Having maturity Living close to the edge Looking after oneself Winning mentality Not making excuses Courage and conviction Being consistent Showing conceit for the opposition Loving the competition	28 23 12 12,13 15 4,12,27 10 21 8,10,15 15 2 12 8,12,13, 23,24,32,33 22 2,3 13,20,28 11 20
Dealing with Set-Backs	Dealing with set-backs Dealing with form lapses in form Losing face Dealing with losing	1,3,4,6,12,13,15,16,19,20,23,24,27,29,30,31,32 3,9,12,20 21 19,20
Dealing with Mistakes	Dealing with external distractions Being able to Block out	1,2,3,8,12,13,15,20,21,23,24,32 2,9,14,15,17,20,23,24,27
Handling Pressure	Handling Pressure Being smart under pressure Handling event pressure Not feeling over awed on the day	2,4,5,13,14,18,20,23,28,29,30,32 2,30 14,23,28,32 5
Self Control	Self control Technical control Being patient Control of ego Emotional control	8,9,12,16,23 5,8,9,20 3 12,13,20,23 1,13,11,20,21,23
Handling Success	Dealing with success Not fearing success	12,20,23 13
Previous Experience	Previous experience	8,9,10,13,18,20,23,28,29,32
Physical Fitness	Physical toughness Extreme fitness Natural toughness	17,21 4,8,13,10,24,32 11
Physical Coping Ability	Coping with Pain Coping with Discomfort Perform when exhausted Dealing with fatigue	12,16,23,27 8,10,23,24 8,10 8,10,13,
Training Situations	Being away from home Training methods Smart training Tough training Training culture Competitive training environment	13,32 1,5,6,14,15,17,19,21,25 1,4,13,14,20 4,10,13,15,16,19,23,24,30 1,4,19 4,8,17,20,27,32

	Training with the best	8,17,23,
Situational Demands	Discipline Requirements	2,4,6,8,12,13,15,17,20,23
	Situation issues	2,8,10,19,20,28
Lifestyle Management	Lifestyle demands	1,6,10,23,32
	Adaptation to environment	9,10,20,32
Extending Oneself Beyond the Comfort Zone	Extending oneself	1,10
	Pushing oneself	8
	Leaving the comfort zone	12
	Making sacrifices	30
	Raising the bar	14
Dealing with Stress & Anxiety	Controlling the nerves	2,4,5,13,16,17, 20,21,23,
	Dealing with worry about performance	2,8,11,16,17,23
	Dealing with worry over selection	12,21
	Absence of negatives	13
	Dealing with fear	9,11,23,24,25,32,
	Controlling anxiety &	
	Holding it together	25,
	Staying relaxed	6,13,21,23

Appendix C

**Emergent concepts, supporting key point codes and
sources of data for the Elite Athlete sample, n = 37
(14 m, 23 f)**

Emergent concept	Supporting Codes (Key point)	Source of Data Elite Coach Interviews Including coded key point
Self Belief	Self belief	1,2,6,7,8,9,14,16,19,20,23,26,29,31,32,33,34,35
Self Confidence	Self confidence Self confidence in ability Self belief Respect from others Knowing your tough State confidence On the day confidence In training programme	1,2,4,6,7,8,10,11,12,14,15,17,19,20,22, 23,24,25,26,28,29,30,35,37 1,2,6,7,8,9,14,18,19,29,31,32,33,34,35 1,2,6,7,8,9,14,16,19,20,23,26,29,31,32,33,34,35 2,3,4,6,7,15,20,26,27,31,32,35,36 7,20 2 2,3,6,10,15,19 9,2,3,6,15,20,26,30,
Dealing with Mistakes and Setbacks	Dealing with mistakes Dealing with setbacks cont, Dealing with failure Coping with adversity Proving people wrong Getting through a difficult phase	1,7,8,9,12,15,16,18,21,22,23,26,27,29,32,34, 1,2,4,7,8,9,11,12,14,15,16,18,19,21,22,23, 24,25,26,27,29,31,34,35,37 7,20,36, 7,20,25,36 2,6,12,19,29,32,34 7,26
Absolute Focus	Being Focused Ability to focus Mental parking Unconscious quality Staying in the present In the zone Not thinking too much Mental intensity	1,2,7,12,14,30,33,35 2,3,4,5,8,10,13,14,15,16,17,19,21,29,30,34,35 8,12 6,10,19,28,29 35 30 1,26 12,29,34
Anxiety Control	Dealing with anxiety Controlling the nerves Dealing with worry Worrying about others Avoiding negative thoughts Avoiding complacency Re-interpreting anxiety Feeling overawed Staying relaxed Not thinking too much	2,3,6,7,8, 25,26,27,28,30,31 2,3,6,7,8, 16,25,26,28,30,33,35 2,6,7,10,35 30 3,6,8,10,19,20,26,29,30,31,33 35 10, 10,28,30 23 23,26,27
Dealing with Situational Issues	Media exposure Non selection Team pressures Having the opportunity to medal Dealing with a life threat Dealing with captaincy Dealing with team mates Dealing with different conditions Travelling lifestyle Lifestyle demands Dealing with a circus environment at the Games Competitive selection Lifestyle issues	7, 2,16,29, 12,16,28,34 20,36 7,17,37 12,28,34,36 6,9,12,15,16,20,26,28,29,30,34 2,8,12,26,33,36 15 2,6,8,10,15,19,29,35 7,25,35 3,4,9,16,29 2,3,4,6,8,10,15,19,29,34,35

Self Control	Self control Big point control Control of ego Self demanding Refusing to be intimidated Making it happen Avoid feeling sorry for oneself	1,2,7,8,12,17,20,23,28,29,32 1,6,8,15,20,26 19,26 3,4,15,26 26 1 19
Dealing with Expectations	Achieving the unexpected Dealing with expectations Winning when expected to win	2,12,15 2,15,26,32 2,15,26,32
Dealing with Personal Pressures	Being self critical Imposing exacting standards Internal pressure	3,4,9,15,20,23,26,32 2,3,4 1,2,3,4,30
Dealing with Distraction	Dealing with distractions Blocking out Keeping it all in perspective Not thinking too much about it all	2,3,4,6,7,8,15,20,21,23,25,26,28,29,30,32,34,35,36 1,3,4,6,7,14,15,20,26,28,30,35,36 7,19,26,37 1,8,10,26,31
The Winning Mentality	Higher level mental skills Knowing how to win The winning mentality Ability to seize the opportunity Showing resilience Having the killer touch Making it happen Doing it when it matters Grinding a result Not showing a weakness Being single minded Being ruthless Making effective decisions	1,2,3,4,7,23,26,33,36 1,15,26, 1,2,3,4,6,11,15,18,19,20,23,26,29,31,36 1,8,15,20,26 1,2,3,4,6,7,18,20,23,25,26,31,36,37 1 1,6,7,15,23,25,26,27,32 7,23,26 26 1,20 7,11,18,27,31,36 1,11,18,26,31,36 18,24,32
Determination	Determined Making sure you get what you want Reaching the intensity level Inner strength Inner fight Channeling your desire Heart v head	3,6,8,9,11,16,18,19,21,22,24,34 15,30 29,34 8 20 1,20,21,24,32 19,29
No Fear	Not feeling over-awed Not having excuses No fear at all	35 19 2,19,27,31,34,
Critical Moments	Dealing with immediate situations- one off chances Big point situations Ready room mentality	1,14,25,27,36,37 1,9,15,20,26 14,25,37
Reactions to Others	Handling feedback Proving people wrong	2,3,4,20,26,34 2,12,19,29,31,32
Extending beyond the Comfort Zone	Extending oneself Pushing oneself Going beyond where never been before Team application beyond comfort zone	2,3,4,19, 24, 2,3,4,34 2,3,4,
Previous Experience	Previous experience of being there before Athletic maturity	1,2,3,4,7,12,21,26,31,32,35,36 2,7,32

Goal Setting	Setting personal targets Being flexible Being patient Using ego orientation positively	8,10,12,19,21,32 7 8,26,36, 2
Positive Self Talk	Using positive self talk effectively	1,2,7,19,29
Commitment	Total commitment & Being totally dedicated	1,20,23,26,32 11,20,21,26,32
Driving Ambition	Driving ambition Wanting it badly enough	2,3,4,18,20,35,36 1,2,3,4,20,26,35,36
Mental Preparation	Using mental skills to prepare well	2,3,4,7,18,34,36

Appendix D

Sample Details

**Adventure/Explorer sample -listed
disciplines**

Elite Coach sample -listed disciplines

Elite Athlete sample -listed disciplines

Adventurer / Explorer Sample -Number =21 (17 male, 4 female)

1. Mountaineer
2. Mountaineer
3. Mountaineer - Climber *
4. Adventurer
5. Climber
6. Explorer
7. Climber
8. Climber
9. Kayaker *
10. Mountaineer / Climber
11. Adventurer
12. Adventurer
13. Explorer
14. Adventurer
15. Military Officer
16. Mountaineer - Climber
17. Explorer
18. Adventurer/ Yachtswoman *
19. Climber *
20. Mountaineer / Climber
21. Mountaineer / Climber

* denotes female

Elite Coach Sample – number = 33 (25 male , 8 female)

1. Basketball
2. Equestrian *
3. Rugby
4. Swimming *
5. Canoe Slalom ** (*)
6. Swimming *
7. Field Hockey *
8. Sailing *
9. Canoe Slalom *
10. Sailing *
11. Sailing**
12. Field Hockey*
13. Badminton*
14. Field Hockey** (*)
15. Swimming*
16. Bobsleigh*
17. Swimming*
18. Track and Field Athletics*
19. Boccia** (*)
20. Canoe Slalom*
21. Swimming* * (*)
22. Basketball
23. Swimming*
24. Cycling*
25. Swimming** (*)
26. Badminton*
27. Field Hockey *
28. Swimming*
29. Field Hockey** (*)
30. Swimming*
31. Equestrian** (*)
32. Cycling*
33. Cycling *

* = coached athletes who have won medals at major championships

29 / 33 = 88% of sample

** = female coach

Elite Athlete Sample – number = 37 (14 male , 23 female)

1. Badminton *
2. Rowing **(*)
3. Rowing **(*)
4. Rowing **(*)
5. Swimming **
6. Badminton ** (*)
7. Modern Pentathlon *
8. Snooker ** (*)
9. Badminton* * (*)
10. Swimming ** (*)
11. Cycling *
12. Field Hockey** (*)
13. Sailing **
14. Swimming *
15. Badminton * * (*)
16. Field Hockey * * (*)
17. Kayak **
18. Cycling** (*)
19. Swimming ** (*)
20. Badminton *
21. Equestrian ** (*)
22. Sailing**
23. Canoe Slalom *
24. Cycling **
25. Swimming *
26. Badminton *
27. Canoe Slalom*
28. Field Hockey** (*)
29. Field Hockey** (*)
30. Badminton*
31. Swimming** (*)
32. Canoe Slalom **(*)
33. Equestrian *
34. Field hockey* *(*)
35. Swimming *
36. Track and Field Athletics *
37. Swimming *

* = athletes who have won medals at major championships

32 / 37 athletes = 86% of sample

** = female athlete

Appendix E

Complete Reference List

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**AN INVESTIGATION INTO THE
PERCEPTIONS OF MENTAL TOUGHNESS
OF ADVENTURERS/ EXPLORERS, ELITE
ATHLETES AND ELITE COACHES**

THOMAS FAWCETT
B. Ed M. Ed

**A thesis submitted in partial fulfilment of the
requirements of the University of Northumbria at
Newcastle for the degree of Doctor of Philosophy**

2006

Volume 2 of 2

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1.

The interview guide , mental toughness questions and probes.

I am interested in understanding different subjective experiences of adventurers, elite coaches and elite athletes within their chosen disciplines. I am particularly interested in your perceptions (what you think) and how you explain the concept of mental toughness. I am not interested how others explain it or what they think it is. I am seeking to find out and develop an understanding from your own perspective and what your thoughts are on the questions being asked. Take as much time as you like in answering the questions. If you do not understand what I ask, please ask me to repeat it or re-phrase it for you. Please explain exactly what you think, not what you have previously heard, read or what you think others think it is. Some of the questions will ask you to recall previous experiences. If you cannot recall them vividly and be able to describe them please do not offer explanations or provide false information. If you cannot recall your thoughts or feelings at the time just inform me of that. Please do not try and guess any answers, it is important you provide answers that are true and consistent with your own thoughts, feelings and beliefs. It is about your own subjective thoughts and experiences.

To compliment the questions you are asked to consider a personal experience in where you have either demonstrated mental toughness (or its alternative term) or you have observed an experience demonstrated by others, in order to identify specific characteristics within its make up. Do you accept the term Mental Toughness and have you used it at all in your past experience ?

Question 1

Do you accept the term Mental Toughness and have you used it at all in your past experience ?

Elaboration probe 1a: If so, how do you attempt to explain it ? I need to fully understand how you have used it in certain situations and what it consisted of?

Thinking back what factors contributed to the mental toughness? Are you able to describe and explain the experience in detail ?

Or

Elaboration probe 1b: If not, do you prefer any other explanation that you may offer, to better explain / interpret the concept ? , Then using your own term how do you attempt to explain it ? I need to fully understand how you have used it in

certain situations and what it consisted of? Thinking back what factors contributed to it ? Are you able to describe the experience ?

Alternative questions :

Can you think of a personal experience when you or a colleague demonstrated mental toughness and describe what it was about that experience that you considered it to be so mentally tough?

Or

Have you ever demonstrated what you consider to be mental toughness in your experience, if so could you please describe that experience in detail and what you did in that situation ? Can you think of that experience and describe it in detail as it happened ?

Elaboration probe 1c: If not, do you prefer any other explanation that you may offer, to better explain / interpret the concept ?

Alternative options:

Can you think of a personal experience when you or a colleague demonstrated mental toughness and, describe what it was about that experience that you considered it to be so mentally tough?

Or

Elaboration probe 1b: If not, do you prefer any other explanation that you may offer to better explain / interpret the concept ?

If there are any questions which you would like to revisit or have had any difficulty with, please let me know and I will attempt to rephrase them for you. Thank you for your time, in sharing your thoughts with me, it is much appreciated. All the information will stay confidential and I will be forwarding the full verbatim transcript to you and a member check document for you to review in the near future.

Tom Fawcett.

Interviewer copy only

Possible follow up questions to compliment dialogue if emergent discussion allows:

What do you consider to be the core components of mental toughness or your alternative phrase within your own experience?

Can mental toughness make the difference between winning and losing a medal in a major championship?

Do you have a specific example? If so could you describe it in detail?

Can you still be MT and to have failed in what you do?

If so, how?

Do you think different tasks require different aspects of being tough?

Do you think tough athletes are tough in other lifestyle areas?

If so, in what ways are people different, could you provide typical examples?

Or

Do you think tough athletes are tough in everything they do (consistent) or, just in their sports discipline ? Do you think it transfers?

If so what factors transfer across situations?

Do you think experiencing a set back is important when developing MT ?

If so, what is it about setbacks that make people toughen up?

How much do you think previous experience plays a part in making people tough?

How has experience had an effect on you?

Do you think people can train to be tough, or is toughness in ones personal make-up?

Or

Do you think we all have it within us, but many people just choose not to explore it?

How much do you think MT is linked to physical toughness ?

If so could you provide an example to explain the link?

If there are any questions which you would like to revisit or have had any difficulty with, please let me know and I will attempt to rephrase them for you. Thank you for your time, in sharing your thoughts with me, it is much appreciated. All the information will stay confidential and I will be forwarding the full verbatim transcript to you and a member check document for you to review in the near future.

Tom Fawcett.

2.

7 Crosby Road South
Waterloo
Liverpool
Merseyside
L22 1 RG

23rd February 2000

Dear ,

Could you find a few minutes to scan the material enclosed and please send it back to me ? Please find enclosed a set of data categories, which I have coded from your interview data. As a credibility check could you please scan the highlighted text and indicate by initialling the text next to the node title if you agree that the label category is acceptable for your explanation. The example below provides you with what you need to do as it was accepted as a correct label for the explanation.

COACHES/MALE/MENTAL/ACCEPTANCE OF PERSONAL WEAKNESSES

*** Definition:

REGISTERING WEAKNESSES THEN DOING SOMETHING ABOUT THEM TO IMPROVE

+++++

+++ ON-LINE DOCUMENT: Author (Elite Coach 1)

+++ Retrieval for this document: 1 unit out of 285, = 0.35%

++ Text units 189-189:

*Coach 1 : I, I think, I don't know about technique or whatever but it is back to this, if you can picture yourself in that situation and you work out all the little bits, like for example, something like serving, right, *if you have got a weakness in your serve, you identify it and work on it like mad. So when it really comes, when push comes to shove, in the Olympics at 13 all in the third, you stand over that serve and you go phew, and it goes in really tight, and as a result you win that point, you win the tournament.* Whereas other people I know who won't accept that their serve is a weakness, so they go to the Olympic games, playing well, comes to the crunch, they don't see it as a weakness, they go in there and the thing doesn't go over or it pops up and loses the point, loses the match. Someone says you are unlucky there, blah, blah, blah, its more because they haven't focused on their weakness of what they have got to work on.

Your data produced *interesting and valuable material*. I would like to thank you for helping me in this research project. Please return the documents signed, back to me when you have finished reviewing them. I have enclosed a second copy for your keeping and a SAE for the return of the master copy.

Any problems please feel free to call me and I will discuss any issues with you.

Yours

Tom Fawcett
University of Salford

MENTAL TOUGHNESS INTERVIEW

Member check

Elite : ATHLETE- -- MALE

Great Britain

Name :

**TRACK AND FIELD ATHLETICS
(HIGH JUMP)**

Medals to date:

**This is to confirm that Tom Fawcett conducted an interview with myself
(xx) on the subject of "mental toughness." The interview was recorded in written
form and I have checked and can confirm that this is a true record of the transcript .**

**I agree to the coding of the categories included within this document, given
the material provided unless stated and questioned.**

Signed

Date :

**BELOW ARE THE MENTAL FACTORS WHICH WERE IDENTIFIED AS BEING RELATED TO
MENTAL TOUGHNESS FROM YOUR INTERVIEW:**

**The extracts are your comments, which were taken from the transcript to explain the
factor. If you agree they are a correct and a true representation of what was said
please initial by the side of each example. If not please indicate a change if required.**

+++ ON-LINE DOCUMENT:

- **ATHLETES/MALE/MENTAL/DEALING WITH PRESSURE/HANDLING FAILURE**
- **ATHLETES/MALE/MENTAL/DEALING WITH PRESSURE/EVENT PRESSURE/DOING IT WHEN IT MATTERS**
- **ATHLETES/MALE/MENTAL/DETERMINED/HAVING THE OPPORTUNITY TO MEDAL**
- **ATHLETES/MALE/MENTAL/GAINING THE MENTAL EDGE**
- **ATHLETES/MALE/MENTAL/winning or losing factor/TAKING THE RISK**
- **ATHLETES/MALE/MENTAL/HANDLING PRESSURE/EVENT PRESSURE**

- ATHLETES/MALE/MENTAL/DRIVING AMBITION/WANTING IT BADLY ENOUGH
- ATHLETES/MALE/PHYSICAL/DEALING WITH PHYSICAL INJURY AND PERFORMING
- ATHLETES/MALE/EMOTIONAL/CONTROL
- ATHLETES/MALE/ENVIRONMENT/TRAINING BEHAVIOUR
- (2 1 4 5) /ATHLETES/MALE/ENVIRONMENT/SITUATIONAL DEMANDS
- Free Nodes/MT PERSONAL EXAMPLE - adventure/athletes make
- Free Nodes/Does it exist ?
- Free Nodes/Mental Toughness transfer

1.

Question related to : Dealing with a knockback

I think...MT comes from the preparation to be able to be MT. There's quite a bit in the preparation but a lot of it comes from the competing. A lot of kids come through when they are 14, 15, 16, 17 and I did that myself. British records, number 1 in the country, but I wasn't one of them. I went to the British Schools on five occasions and came 2nd, so if you do that a lot of it was to prove and strive to be a winner when the guy who was ahead of me had it easier. So a lot of it was learning how to be tough, I could take a knock.

Tf So lets take that one, the ability to bounce back and take a knock, how important is that to developing MT ? Setbacks are interesting and you had them on 5 separate occasions in your teenage years ! Did you get fed up of being 2nd ?

* Yeah, if I had come through and won them and won every competition, and been extremely talented then I don't think I would have been as tough.

Tf In your finals, in Atlanta and Barcelona, did you go to both, to win a medal ?

*Yeah.

Tf You got a medal in Atlanta but not Barcelona is that correct ?

*Yeah.

Tf Was it because you took the risk in 1992 ?

* Barcelona was the reason I finished the world number 1. Although I didn't achieve a medal Barcelona and dealing with the disappointment of not getting a medal was the reason I finished the season as world number one.

*You can train what you feel is 100% for the year leading up to the next major championship and you can mess up at the major championship. Giving 100% of what you can possibly give, and you suddenly get that setback and you don't perform, then the following time you train and give 110%. You already feel that you have given the 100% but you find

that little bit extra to push you toward that reward.

To take a medal in Barcelona would have been like winning the Olympic games to me. So not taking a medal in 1992 was a big big disappointment to me.

2.

Question related to : MT related to just doing it when it matters ?

Big Event mentality

* I think it is , I had a long conversation with Darren Campbell the other day and he said if you look at the likes of Linford Christie when he was coming through , if you look at a typical season and the list of times you would be looking at 10 - 2's and 10 -3's , (which were crap times) yet at the major championships he would be well lower. Because you set yourself goals accordingly. Money is not the be all and end all , although we all need money to live , but its not all about that really. To some its more than that and at the major events it is about that. I will get to the worlds or the Olympics stronger or I will do the grand prix circuit and make the money ! yet when you get to the major championships you are shot to pieces ! All your best performances are left behind on the grand prix circuit !

* In every one of those major championships in which I won medals there was another guy there who also medalled. He was a polish guy called ** , he retired just after me and you would not see him anywhere all year apart from the major championships. He would come to the grand prix's now and again and jump 2.15 , 2.17 , these were heights that kids can jump ! He would go to the major events and pull out a 2.37, or a 2.35 , because at the end of the day that was needed at the majors.

* Nothing, there's nothing wrong with that at all. You talk to people who go to the circuit and those who haven't been around it for a while or who have just come on to the circuit and you ask them who do you think will be a major player ? They would mention lots of names but miss out the guy . I would say what about that guy who just comes out for the majors and who has won a medal here and a medal there , and he also won a medal there in that big one ?

3.

Question related to : Handling a disappointment

* Yes and no, I went into it to win but I went into the games really highly ranked and I had a realization going into the games that some people never ever get to compete in an Olympic Games , not because they are good enough , but they never have the luck of being in the position that they are able to compete and in the position that they are in great shape. Although it was an initial disappointment of only getting a bronze medal it was closely followed by the relief that I did get a medal in a major championships. So there was a sense of relief in getting the bronze in Atlanta.

To take a medal in Barcelona would have been like winning the Olympic

games to me. So not taking a medal in 1992 was a big, big disappointment to me.

4 . Question related to :

GETTING THE MENTAL EDGE OVER AN OPPONENT

* Well, I used to think that I know I'm tough enough mentally and I'm never out of the game. I knew that and they knew that. I knew they were looking at me and thinking he's still in and he's not out of this by far. The guy who is winning the world championships now 2003 (Stefan Hann), when I was number 1 in the world and was competing in Sweden , the guy was a little ***hole. This guys small and he's coming through and very arrogant and had no respect for what I had done. So, I used MT to psyche the poor guy out. I shouldn't have done it but I was using it as a bit of fun. I'm sorry, if your doing that and thinking about the guy walking round in front of you with an Olympic medal ! So, what I decided to do was to follow the guy round and where ever he went I went and where ever he sat down I sat down and I made him think about me rather than think about the competition. Ever time he went to jump the bar in practice I went after him and cleared it. Where ever you want to be I'll be there. Now I didn't enjoy doing that but at the end of the day, I probably did him a favour.

In Atlanta , the guy who finished 4th there was a guy called Tappich , he's been banned a couple of times for drugs incidently. Before the Olympics I made a point of going around everybody and wishing them good luck. But, its not a game, its just the way I am. At the end of the day there's nothing I can do to stop them jumping well and jumping 2.40. This guy , I went to shake his hand and he just looked at me and ignored me. Well I rise to stuff like that anyway and when I'm standing there and looking at 2.35 which was the height that won me the medal. I'm standing there 50% looking at the bar and 50 % looking at that guy. I'll show you how to do it and no-one treats me like that , you're the one who's been done for drugs and I'm the one trying to be courteous, and you won't acknowledge it , so stuff it.

Cont

3.

NUD*IST Material

All NUD*IST material is available on CD rom for perusal. Confidentiality has to be respected. The raw data archive contains all transcribed interviews and node index systems for each sample group. Each individual received a personal member check document based on his or her extracted data for analysis. These are available for scrutiny subject to confidentiality.

Q.S.R. NUD.IST Power version, revision 4.0.
Licensee: UNN.

PROJECT: PHD97 – 2003 , User FAWCETT TOM.

Free Nodes = 441

Index tree route = 1249 nodes for 3 major sample groups

LIST OF MAJOR NODES FOR EACH SAMPLE GROUP :

ADVENTURE/FEMALE/MENTAL

*** Created: 14:01, 14 Oct, 1998.

*** Last modified: 12:58, 19 Mar, 2003.

*** The siblings of this node are:

- (3 1 2) /ADVENTURE/FEMALE/PHYSICAL
- (3 1 3) /ADVENTURE/FEMALE/EMOTIONAL
- (3 1 4) /ADVENTURE/FEMALE/ENVIRONMENTAL

*** The children of this node are:

- (3 1 1 1) /ADVENTURE/FEMALE/MENTAL/SELF CONFIDENCE
- (3 1 1 2) /ADVENTURE/FEMALE/MENTAL/Combating fear
- (3 1 1 3) /ADVENTURE/FEMALE/MENTAL/Social Support
- (3 1 1 4) /ADVENTURE/FEMALE/MENTAL/Moral courage
- (3 1 1 5) /ADVENTURE/FEMALE/MENTAL/Personal Challenge
- (3 1 1 6) /ADVENTURE/FEMALE/MENTAL/Discipline
- (3 1 1 7) /ADVENTURE/FEMALE/MENTAL/Personal Perception of MT
- (3 1 1 8) /ADVENTURE/FEMALE/MENTAL/Self Talk Skills
- (3 1 1 9) /ADVENTURE/FEMALE/MENTAL/A Sense of Perspective
- (3 1 1 10) /ADVENTURE/FEMALE/MENTAL/PERSONAL MEANING
- (3 1 1 11) /ADVENTURE/FEMALE/MENTAL/INDEPENDENCE
- (3 1 1 12) /ADVENTURE/FEMALE/MENTAL/Effective Decision Making
- (3 1 1 13) /ADVENTURE/FEMALE/MENTAL/Patience
- (3 1 1 14) /ADVENTURE/FEMALE/MENTAL/Acceptance of failure
- (3 1 1 15) /ADVENTURE/FEMALE/MENTAL/Normal behaviour
- (3 1 1 16) /ADVENTURE/FEMALE/MENTAL/Coping with death
- (3 1 1 17) /ADVENTURE/FEMALE/MENTAL/DEALING WITH PRESSURE
- (3 1 1 18) /ADVENTURE/FEMALE/MENTAL/Dealing with Mental Drainage
- (3 1 1 22) /ADVENTURE/FEMALE/MENTAL/Ability to suffer

ADVENTURE/FEMALE/PHYSICAL

*** Created: 14:01, 14 Oct, 1998.

*** Last modified: 12:58, 19 Mar, 2003.

*** The siblings of this node are:

(3 1 1) /ADVENTURE/FEMALE/MENTAL

(3 1 3) /ADVENTURE/FEMALE/EMOTIONAL

(3 1 4) /ADVENTURE/FEMALE/ENVIRONMENTAL

*** The children of this node are:

(3 1 2 1) /ADVENTURE/FEMALE/PHYSICAL/Stamina

(3 1 2 2) /ADVENTURE/FEMALE/PHYSICAL/Lack of Oxygen

(3 1 2 3) /ADVENTURE/FEMALE/PHYSICAL/physical - mental link

(3 1 2 4) /ADVENTURE/FEMALE/PHYSICAL/Coping with Physical discomfort

ADVENTURE/FEMALE/EMOTIONAL

*** Created: 14:01, 14 Oct, 1998.

*** Last modified: 12:58, 19 Mar, 2003.

*** The siblings of this node are:

(3 1 1) /ADVENTURE/FEMALE/MENTAL

(3 1 2) /ADVENTURE/FEMALE/PHYSICAL

(3 1 4) /ADVENTURE/FEMALE/ENVIRONMENTAL

*** The children of this node are:

(3 1 3 1) /ADVENTURE/FEMALE/EMOTIONAL/Coping with failure

(3 1 3 2) /ADVENTURE/FEMALE/EMOTIONAL/Controlling emotions

ADVENTURE/FEMALE/ENVIRONMENTAL

Environment & situational factors

*** Created: 11:01, 15 Oct, 1998.

*** Last modified: 12:58, 19 Mar, 2003.

*** The siblings of this node are:

(3 1 1) /ADVENTURE/FEMALE/MENTAL

(3 1 2) /ADVENTURE/FEMALE/PHYSICAL

(3 1 3) /ADVENTURE/FEMALE/EMOTIONAL

*** The children of this node are:

(3 1 4 1) /ADVENTURE/FEMALE/ENVIRONMENTAL/Accepting the Situation

(3 1 4 2) /ADVENTURE/FEMALE/ENVIRONMENTAL/Experience Itself

(3 1 4 3) /ADVENTURE/FEMALE/ENVIRONMENTAL/human resilience

(3 1 4 4) /ADVENTURE/FEMALE/ENVIRONMENTAL/METICULOUS PREPARATION
AND PLANNING

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ADVENTURE / MALE / MENTAL

Psychological characteristic

*** Created: 13:41, 14 Oct, 1998.

*** Last modified: 14:28, 26 Mar, 2003.

*** The siblings of this node are:

(3 2 2) /ADVENTURE/MALE/PHYSICAL

(3 2 3) /ADVENTURE/MALE/EMOTIONAL

(3 2 4) /ADVENTURE/MALE/Environment

*** The children of this node are:

(3 2 1 1) /ADVENTURE/MALE/MENTAL/Being Alone

(3 2 1 3) /ADVENTURE/MALE/MENTAL/LACK OF FEAR

(3 2 1 4) /ADVENTURE/MALE/MENTAL/Self Confidence

(3 2 1 6) /ADVENTURE/MALE/MENTAL/FORWARD PLANNING

(3 2 1 7) /ADVENTURE/MALE/MENTAL/Avoiding Mental Slips

(3 2 1 9) /ADVENTURE/MALE/MENTAL/Recharge
 (3 2 1 10) /ADVENTURE/MALE/MENTAL/Intuition
 (3 2 1 12) /ADVENTURE/MALE/MENTAL/Effective Decision Making
 (3 2 1 14) /ADVENTURE/MALE/MENTAL/Wisdom from Experience
 (3 2 1 15) /ADVENTURE/MALE/MENTAL/Composure under Pressure
 (3 2 1 16) /ADVENTURE/MALE/MENTAL/Single Mindedness
 (3 2 1 17) /ADVENTURE/MALE/MENTAL/Experiencing Failure
 (3 2 1 18) /ADVENTURE/MALE/MENTAL/Knowing oneself
 (3 2 1 19) /ADVENTURE/MALE/MENTAL/Social Support
 (3 2 1 20) /ADVENTURE/MALE/MENTAL/Control of Stress
 (3 2 1 22) /ADVENTURE/MALE/MENTAL/Ability to suffer
 (3 2 1 23) /ADVENTURE/MALE/MENTAL/Dealing with Uncertainty
 (3 2 1 24) /ADVENTURE/MALE/MENTAL/Handling Complacency
 (3 2 1 25) /ADVENTURE/MALE/MENTAL/Personal Challenge
 (3 2 1 26) /ADVENTURE/MALE/MENTAL/DETERMINATION
 (3 2 1 27) /ADVENTURE/MALE/MENTAL/Discipline
 (3 2 1 28) /ADVENTURE/MALE/MENTAL/Automatic processing
 (3 2 1 29) /ADVENTURE/MALE/MENTAL/Full Attention
 (3 2 1 30) /ADVENTURE/MALE/MENTAL/Sense of purpose
 (3 2 1 32) /ADVENTURE/MALE/MENTAL/Unstability
 (3 2 1 33) /ADVENTURE/MALE/MENTAL/Patience
 (3 2 1 34) /ADVENTURE/MALE/MENTAL/Hitting your target
 (3 2 1 35) /ADVENTURE/MALE/MENTAL/Combating Homesickness
 (3 2 1 36) /ADVENTURE/MALE/MENTAL/Spontaneity
 (3 2 1 38) /ADVENTURE/MALE/MENTAL/Common sense
 (3 2 1 39) /ADVENTURE/MALE/MENTAL/Adaptable & Flexible
 (3 2 1 40) /ADVENTURE/MALE/MENTAL/Seeing the big picture
 (3 2 1 41) /ADVENTURE/MALE/MENTAL/Mental reserve
 (3 2 1 42) /ADVENTURE/MALE/MENTAL/TRAIT - DISPOSITION
 (3 2 1 43) /ADVENTURE/MALE/MENTAL/ABILITY TO COPE
 (3 2 1 44) /ADVENTURE/MALE/MENTAL/PERCEIVED IMPORTANCE
 (3 2 1 45) /ADVENTURE/MALE/MENTAL/Passion
 (3 2 1 46) /ADVENTURE/MALE/MENTAL/Mental Preparation techniques
 (3 2 1 47) /ADVENTURE/MALE/MENTAL/Success & Failure
 (3 2 1 48) /ADVENTURE/MALE/MENTAL/Normal behaviour
 (3 2 1 49) /ADVENTURE/MALE/MENTAL/Ability to handle sleep deprivation

ADVENTURE/MALE/PHYSICAL

Physical Characteristics

*** Created: 13:55, 14 Oct, 1998.

*** Last modified: 14:16, 26 Mar, 2003

*** The siblings of this node are:

(3 2 1) /ADVENTURE/MALE/MENTAL
 (3 2 3) /ADVENTURE/MALE/EMOTIONAL
 (3 2 4) /ADVENTURE/MALE/Environment

*** The children of this node are:

(3 2 2 1) /ADVENTURE/MALE/PHYSICAL/Perception of Physical Task Demand
 (3 2 2 2) /ADVENTURE/MALE/PHYSICAL/Combating physical discomfort -pain etc
 (3 2 2 3) /ADVENTURE/MALE/PHYSICAL/Supreme Fitness
 (3 2 2 4) /ADVENTURE/MALE/PHYSICAL/Shedding the burden
 (3 2 2 5) /ADVENTURE/MALE/PHYSICAL/Physical state
 (3 2 2 6) /ADVENTURE/MALE/PHYSICAL/EVOLUTION

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 (3 2 3) /ADVENTURE/MALE/EMOTIONAL

*** Created: 13:56, 14 Oct, 1998.

*** Last modified: 14:17, 26 Mar, 2003.

*** The siblings of this node are:

- (3 2 1) /ADVENTURE/MALE/MENTAL
- (3 2 2) /ADVENTURE/MALE/PHYSICAL
- (3 2 4) /ADVENTURE/MALE/Environment

*** The children of this node are:

- (3 2 3 1) /ADVENTURE/MALE/EMOTIONAL/POSITIVE ELATION
- (3 2 3 2) /ADVENTURE/MALE/EMOTIONAL/ANGER
- (3 2 3 3) /ADVENTURE/MALE/EMOTIONAL/Dealing with death
- (3 2 3 4) /ADVENTURE/MALE/EMOTIONAL/Unemotional-emotionless
- (3 2 3 5) /ADVENTURE/MALE/EMOTIONAL/control of emotion
- (3 2 3 6) /ADVENTURE/MALE/EMOTIONAL/releasing emotional burdens
- (3 2 3 7) /ADVENTURE/MALE/EMOTIONAL/External objects
- (3 2 3 8) /ADVENTURE/MALE/EMOTIONAL/Drive
- (3 2 3 9) /ADVENTURE/MALE/EMOTIONAL/Deep love for what you do

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ADVENTURE/MALE/Environment

Situational / external factors

*** Created: 9:51, 15 Oct, 1998.

*** Last modified: 13:59, 19th March 2003

*** The siblings of this node are:

- (3 2 1) /ADVENTURE/MALE/MENTAL
- (3 2 2) /ADVENTURE/MALE/PHYSICAL
- (3 2 3) /ADVENTURE/MALE/EMOTIONAL

*** The children of this node are:

- (3 2 4 1) /ADVENTURE/MALE/Environment/Context influence
- (3 2 4 2) /ADVENTURE/MALE/Environment/External factors
- (3 2 4 3) /ADVENTURE/MALE/Environment/Handling the resources
- (3 2 4 4) /ADVENTURE/MALE/Environment/situational toughness
- (3 2 4 5) /ADVENTURE/MALE/Environment/human resilience
- (3 2 4 6) /ADVENTURE/MALE/Environment/societal role
- (3 2 4 7) /ADVENTURE/MALE/Environment/Experience itself
- (3 2 4 8) /ADVENTURE/MALE/Environment/Prolonged suffering

COACHES/FEMALE/MENTAL

*** Created: 14:00, 14 Oct, 1998.

*** Last modified: 13:59, 19th March 2003

*** The siblings of this node are:

- (1 1 2) /COACHES/FEMALE/PHYSICAL
- (1 1 3) /COACHES/FEMALE/EMOTIONAL
- (1 1 4) /COACHES/FEMALE/ENVIRONMENT
- (1 1 5) /COACHES/FEMALE/THE PACKAGE

*** The children of this node are:

- (1 1 1 1) /COACHES/FEMALE/MENTAL/PATIENCE
- (1 1 1 2) /COACHES/FEMALE/MENTAL/PERSONAL RESPONSIBILITY
- (1 1 1 3) /COACHES/FEMALE/MENTAL/MAINTAINING FOCUS
- (1 1 1 4) /COACHES/FEMALE/MENTAL/CONCEIT
- (1 1 1 5) /COACHES/FEMALE/MENTAL/COMPOSURE
- (1 1 1 6) /COACHES/FEMALE/MENTAL/ACCEPTING FAILURE
- (1 1 1 7) /COACHES/FEMALE/MENTAL/ACCEPTANCE OF PERSONAL WEAKNESSES
- (1 1 1 8) /COACHES/FEMALE/MENTAL/DISCIPLINE
- (1 1 1 9) /COACHES/FEMALE/MENTAL/SELF CONFIDENCE
- (1 1 1 10) /COACHES/FEMALE/MENTAL/Decision making

(1 1 1 11) /COACHES/FEMALE/MENTAL/ACCEPTANCE OF THE SITUATION
 (1 1 1 12) /COACHES/FEMALE/MENTAL/Cognitive anxiety
 (1 1 1 13) /COACHES/FEMALE/MENTAL/WILL TO WIN
 (1 1 1 14) /COACHES/FEMALE/MENTAL/ACCEPTING CRITICISM
 (1 1 1 15) /COACHES/FEMALE/MENTAL/Dealing with anxiety
 (1 1 1 16) /COACHES/FEMALE/MENTAL/DEVELOPING MENTAL SKILLS
 (1 1 1 17) /COACHES/FEMALE/MENTAL/HAVING THE VISION AND AMBITION TO
 REACH YOUR GOAL

COACHES/FEMALE/PHYSICAL

*** Created: 14:00, 14 Oct, 1998.
 *** Last modified: 13:59, 19th March 2003
 *** The siblings of this node are:

(1 1 1) /COACHES/FEMALE/MENTAL
 (1 1 3) /COACHES/FEMALE/EMOTIONAL
 (1 1 4) /COACHES/FEMALE/ENVIRONMENT
 (1 1 5) /COACHES/FEMALE/THE PACKAGE

*** The children of this node are:

(1 1 2 1) /COACHES/FEMALE/PHYSICAL/ability to feel the skill
 (1 1 2 2) /COACHES/FEMALE/PHYSICAL/NATURAL TOUGHNESS
 (1 1 2 3) /COACHES/FEMALE/PHYSICAL/BEHAVIOURAL CHARACTERISTICS
 (1 1 2 4) /COACHES/FEMALE/PHYSICAL/PHYSICAL TOUGHNESS

COACHES/FEMALE/EMOTIONAL

*** Created: 14:00, 14 Oct, 1998.
 *** Last modified: 13:59, 19th March 2003
 *** The siblings of this node are:

(1 1 1) /COACHES/FEMALE/MENTAL
 (1 1 2) /COACHES/FEMALE/PHYSICAL
 (1 1 4) /COACHES/FEMALE/ENVIRONMENT
 (1 1 5) /COACHES/FEMALE/THE PACKAGE

*** The children of this node are:

(1 1 3 1) /COACHES/FEMALE/EMOTIONAL/CONTROLLED EMOTIONS

COACHES/FEMALE/ENVIRONMENT

*** Created: 15:03, 27 Jan, 1999.
 *** Last modified: 13:59, 19th March 2003
 *** The siblings of this node are:

(1 1 1) /COACHES/FEMALE/MENTAL
 (1 1 2) /COACHES/FEMALE/PHYSICAL
 (1 1 3) /COACHES/FEMALE/EMOTIONAL
 (1 1 5) /COACHES/FEMALE/THE PACKAGE

*** The children of this node are:

(1 1 4 1) /COACHES/FEMALE/ENVIRONMENT/SITUATIONAL DEMANDS

COACHES/FEMALE/THE PACKAGE

PUTTING EVERYTHING TOGETHER WHEN REQUIRED

*** Created: 16:58, 4 Jan, 2003.
 *** Last modified: 12:58, 19 Mar, 2003.
 *** The siblings of this node are:

(1 1 1) /COACHES/FEMALE/MENTAL
 (1 1 2) /COACHES/FEMALE/PHYSICAL

(1 1 3) /COACHES/FEMALE/EMOTIONAL
(1 1 4) /COACHES/FEMALE/ENVIRONMENT
*** This node has no children.

COACHES / MALE / MENTAL

*** Created: 13:58, 14 Oct, 1998.
*** Last modified: 12:58, 19 Mar, 2003.
*** The siblings of this node are:

(1 2 1) /COACHES/MALE/PHYSICAL
(1 2 3) /COACHES/MALE/EMOTIONAL
(1 2 4) /COACHES/MALE/ENVIRONMENT

*** The children of this node are:

(1 2 2 1) /COACHES/MALE/MENTAL/USING APPROPRIATE INTERVENTIONS
(1 2 2 2) /COACHES/MALE/MENTAL/SELF CONFIDENCE
(1 2 2 3) /COACHES/MALE/MENTAL/ABILITY TO COPE
(1 2 2 4) /COACHES/MALE/MENTAL/ABILITY TO FOCUS
(1 2 2 5) /COACHES/MALE/MENTAL/PUSHING ONESELF
(1 2 2 6) /COACHES/MALE/MENTAL/ACCEPTANCE OF PERSONAL WEAKNESSES
(1 2 2 7) /COACHES/MALE/MENTAL/SUSTAINED DEMANDS
(1 2 2 8) /COACHES/MALE/MENTAL/PERFORMING WHEN EXHAUSTED
(1 2 2 9) /COACHES/MALE/MENTAL/SELF MOTIVATION
(1 2 2 10) /COACHES/MALE/MENTAL/PROFESSIONAL ATTITUDE
(1 2 2 11) /COACHES/MALE/MENTAL/ACHIEVING PERSONAL CHALLENGES
(1 2 2 12) /COACHES/MALE/MENTAL/TOTAL COMMITMENT
(1 2 2 13) /COACHES/MALE/MENTAL/WILL TO WIN
(1 2 2 14) /COACHES/MALE/MENTAL/BEING INDEPENDENT
(1 2 2 15) /COACHES/MALE/MENTAL/RESPONSES TO DIFFICULT SITUATIONS
(1 2 2 16) /COACHES/MALE/MENTAL/CLEAR HEADED
(1 2 2 17) /COACHES/MALE/MENTAL/KILLER INSTINCT
(1 2 2 18) /COACHES/MALE/MENTAL/RISE TO THE OCCASION
(1 2 2 19) /COACHES/MALE/MENTAL/LACK OF FEAR
(1 2 2 20) /COACHES/MALE/MENTAL/SINGLE MINDED
(1 2 2 21) /COACHES/MALE/MENTAL/NOT FEARING SUCCESS
(1 2 2 22) /COACHES/MALE/MENTAL/Accountability
(1 2 2 23) /COACHES/MALE/MENTAL/HANDLING PRESSURE
(1 2 2 24) /COACHES/MALE/MENTAL/KEEPING PERFORMANCE VERY SIMPLE
(1 2 2 25) /COACHES/MALE/MENTAL/BEING CONSISTENT OVER TIME
(1 2 2 26) /COACHES/MALE/MENTAL/PERFORMING CONSISTENTLY
(1 2 2 27) /COACHES/MALE/MENTAL/DRIVING AMBITION
(1 2 2 28) /COACHES/MALE/MENTAL/CONSISTENCY
(1 2 2 29) /COACHES/MALE/MENTAL/AUTO PILOT
(1 2 2 30) /COACHES/MALE/MENTAL/HAVING COURAGE
(1 2 2 31) /COACHES/MALE/MENTAL/EFFECTIVE DECISIONS UNDER PRESSURE
(1 2 2 32) /COACHES/MALE/MENTAL/WIDER RESPONSIBILITY
(1 2 2 33) /COACHES/MALE/MENTAL/MENTAL ATTITUDE
(1 2 2 35) /COACHES/MALE/MENTAL/ONLY PART OF THE FINISHED ARTICLE
(1 2 2 36) /COACHES/MALE/MENTAL/PATIENCE
(1 2 2 37) /COACHES/MALE/MENTAL/DEALING WITH WINNING AND LOSING
(1 2 2 38) /COACHES/MALE/MENTAL/HAVING VISION
(1 2 2 39) /COACHES/MALE/MENTAL/SETTING APPROPRIATE GOALS
(1 2 2 40) /COACHES/MALE/MENTAL/KEEPING IT SIMPLE
(1 2 2 41) /COACHES/MALE/MENTAL/IMAGE MANAGEMENT
(1 2 2 42) /COACHES/MALE/MENTAL/PERCEPTION OF ABILITY

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COACHES/MALE/PHYSICAL

*** Created: 13:59, 14 Oct, 1998.
*** Last modified: 13:59, 19th March 2003
*** The siblings of this node are:

(1 2 2) /COACHES/MALE/MENTAL
(1 2 3) /COACHES/MALE/EMOTIONAL
(1 2 4) /COACHES/MALE/ENVIRONMENT

*** The children of this node are:

(1 2 1 1) /COACHES/MALE/PHYSICAL/ATHLETIC ABILITY RELATED TO
DISCIPLINE
(1 2 1 2) /COACHES/MALE/PHYSICAL/ABILITY TO FEEL THE SKILL
(1 2 1 3) /COACHES/MALE/PHYSICAL/EXTREME FITNESS
(1 2 1 4) /COACHES/MALE/PHYSICAL/PHYSICAL - TECHNICAL LINK
(1 2 1 8) /COACHES/MALE/PHYSICAL/PERFORMING WHEN EXHAUSTED

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COACHES/MALE/EMOTIONAL

*** Created: 13:59, 14 Oct, 1998.
*** Last modified: 13:59, 19th March 2003
*** The siblings of this node are:

(1 2 1) /COACHES/MALE/PHYSICAL
(1 2 2) /COACHES/MALE/MENTAL
(1 2 4) /COACHES/MALE/ENVIRONMENT

*** The children of this node are:

(1 2 3 1) /COACHES/MALE/EMOTIONAL/CONTROL OF FEELINGS

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COACHES/MALE/ENVIRONMENT

*** Created: 15:03, 27 Jan, 1999.
*** Last modified: 12:58, 19 Mar, 2003.
*** The siblings of this node are:

(1 2 1) /COACHES/MALE/PHYSICAL
(1 2 2) /COACHES/MALE/MENTAL
(1 2 3) /COACHES/MALE/EMOTIONAL

*** The children of this node are:

(1 2 4 1) /COACHES/MALE/ENVIRONMENT/NEED TO ADAPT TO THE
ENVIRONMENT
(1 2 4 3) /COACHES/MALE/ENVIRONMENT/MANAGING ONES LIFESTYLE
(1 2 4 4) /COACHES/MALE/ENVIRONMENT/TRAINING SITUATIONS
(1 2 4 5) /COACHES/MALE/ENVIRONMENT/SITUATIONAL DEMANDS
(1 2 4 6) /COACHES/MALE/ENVIRONMENT/PREPARATION

ELITE ATHLETES / FEMALE / MENTAL

*** Created: 14:00, 14 Oct, 1998.
*** Last modified: 14:00, 27th May 2003
*** The siblings of this node are:

(2 2 2) /ATHLETES/FEMALE/PHYSICAL
(2 2 3) /ATHLETES/FEMALE/EMOTIONAL
(2 2 4) /ATHLETES/FEMALE/ENVIRONMENT

*** The children of this node are:

(2 2 1 1) /ATHLETES/FEMALE/MENTAL/DEALING WITH ADVERSITY

(2 2 1 2) /ATHLETES/FEMALE/MENTAL/Maintaining personal control
 (2 2 1 3) /ATHLETES/FEMALE/MENTAL/Dealing with anxiety
 (2 2 1 4) /ATHLETES/FEMALE/MENTAL/concentration
 (2 2 1 5) /ATHLETES/FEMALE/MENTAL/ABILITY TO MENTALLY PREPARE
 (2 2 1 6) /ATHLETES/FEMALE/MENTAL/EXPLORING THE COMFORT ZONE
 (2 2 1 8) /ATHLETES/FEMALE/MENTAL/ACHIEVABLE GOALS
 (2 2 1 9) /ATHLETES/FEMALE/MENTAL/CONFIDENCE
 (2 2 1 10) /ATHLETES/FEMALE/MENTAL/UNCONSCIOUS QUALITY
 (2 2 1 11) /ATHLETES/FEMALE/MENTAL/grinding out a result
 (2 2 1 12) /ATHLETES/FEMALE/MENTAL/COPING WITH MANY BROADER ISSUES
 (2 2 1 13) /ATHLETES/FEMALE/MENTAL/STAYING IN CONTROL
 (2 2 1 14) /ATHLETES/FEMALE/MENTAL/DEALING WITH PRESSURE
 (2 2 1 15) /ATHLETES/FEMALE/MENTAL/winning mentality
 (2 2 1 16) /ATHLETES/FEMALE/MENTAL/determination
 (2 2 1 17) /ATHLETES/FEMALE/MENTAL/HIGH NEED ACHIEVER
 (2 2 1 18) /ATHLETES/FEMALE/MENTAL/IMAGE PRESENTATION
 (2 2 1 19) /ATHLETES/FEMALE/MENTAL/THE FINISHED ARTICLE
 (2 2 1 20) /ATHLETES/FEMALE/MENTAL/sustained toughness
 (2 2 1 21) /ATHLETES/FEMALE/MENTAL/USING MENTAL SKILLS

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ATHLETES/FEMALE/PHYSICAL

*** Created: 14:00, 14 Oct, 1998.
 *** Last modified: 14:01, 27 May 2003 .
 *** The siblings of this node are:

(2 2 1) /ATHLETES/FEMALE/MENTAL
 (2 2 3) /ATHLETES/FEMALE/EMOTIONAL
 (2 2 4) /ATHLETES/FEMALE/ENVIRONMENT

*** The children of this node are:

(2 2 2 1) /ATHLETES/FEMALE/PHYSICAL/control of the situation
 (2 2 2 2) /ATHLETES/FEMALE/PHYSICAL/COPING WITH PHYSICAL DISCOMFORT
 (2 2 2 3) /ATHLETES/FEMALE/PHYSICAL/TOUGHNESS
 (2 2 2 4) /ATHLETES/FEMALE/PHYSICAL/USING SUBSTANCES
 (2 2 2 5) /ATHLETES/FEMALE/PHYSICAL/PHYSICAL CONFIDENCE

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ATHLETES/FEMALE/EMOTIONAL

*** Created: 14:01, 14 Oct, 1998.
 *** Last modified: 14:01, 27 May 2003
 *** The siblings of this node are:

(2 2 1) /ATHLETES/FEMALE/MENTAL
 (2 2 2) /ATHLETES/FEMALE/PHYSICAL
 (2 2 4) /ATHLETES/FEMALE/ENVIRONMENT

*** The children of this node are:

(2 2 3 1) /ATHLETES/FEMALE/EMOTIONAL/COPING WITH EMOTIONS

ATHLETES/FEMALE/ENVIRONMENT

*** Created: 15:02, 27 Jan, 1999.
 *** Last modified: 15:03, 27 May 2003.
 *** The siblings of this node are:

(2 2 1) /ATHLETES/FEMALE/MENTAL
 (2 2 2) /ATHLETES/FEMALE/PHYSICAL
 (2 2 3) /ATHLETES/FEMALE/EMOTIONAL

*** The children of this node are:

(2 2 4 1) /ATHLETES/FEMALE/ENVIRONMENT/SITUATIONAL DEMANDS OF THE TASK
 (2 2 4 2) /ATHLETES/FEMALE/ENVIRONMENT/unknown quality in People
 (2 2 4 3) /ATHLETES/FEMALE/ENVIRONMENT/TRAINING TOUGHNESS
 (2 2 4 4) /ATHLETES/FEMALE/ENVIRONMENT/LIFESTYLE DEMANDS
 (2 2 4 5) /ATHLETES/FEMALE/ENVIRONMENT/toughness transfer
 (2 2 4 6) /ATHLETES/FEMALE/ENVIRONMENT/travelling lifestyle
 (2 2 4 7) /ATHLETES/FEMALE/ENVIRONMENT/NECK TO NECK

ATHLETES/MALE/MENTAL

*** Created: 13:59, 14 Oct, 1998.
 *** Last modified: 13:59, 14 June 2003
 *** The siblings of this node are:

(2 1 2) /ATHLETES/MALE/PHYSICAL
 (2 1 3) /ATHLETES/MALE/EMOTIONAL
 (2 1 4) /ATHLETES/MALE/ENVIRONMENT

*** The children of this node are:

(2 1 1 1) /ATHLETES/MALE/MENTAL/Interpretation of stress
 (2 1 1 2) /ATHLETES/MALE/MENTAL/DEALING WITH PRESSURE
 (2 1 1 3) /ATHLETES/MALE/MENTAL/INNER STRENGTH
 (2 1 1 4) /ATHLETES/MALE/MENTAL/DESIRE TO SUCCEED
 (2 1 1 5) /ATHLETES/MALE/MENTAL/CONTROL
 (2 1 1 6) /ATHLETES/MALE/MENTAL/DEDICATION
 (2 1 1 7) /ATHLETES/MALE/MENTAL/DISCIPLINE
 (2 1 1 8) /ATHLETES/MALE/MENTAL/DEFINING MOMENT
 (2 1 1 9) /ATHLETES/MALE/MENTAL/KILLER TOUCH
 (2 1 1 10) /ATHLETES/MALE/MENTAL/CONFIDENCE
 (2 1 1 11) /ATHLETES/MALE/MENTAL/ATHLETE MATURITY
 (2 1 1 12) /ATHLETES/MALE/MENTAL/HANDLING FEEDBACK
 (2 1 1 13) /ATHLETES/MALE/MENTAL/MEDIA EXPOSURE
 (2 1 1 14) /ATHLETES/MALE/MENTAL/KNOWING THAT YOUR TOUGH
 (2 1 1 15) /ATHLETES/MALE/MENTAL/DETERMINED
 (2 1 1 16) /ATHLETES/MALE/MENTAL/GAINING THE MENTAL EDGE
 (2 1 1 17) /ATHLETES/MALE/MENTAL/BODY LANGUAGE
 (2 1 1 18) /ATHLETES/MALE/MENTAL/PERCEIVED IMPORTANCE OF WHAT YOU
 ARE DOING
 (2 1 1 19) /ATHLETES/MALE/MENTAL/THAT LITTLE BIT EXTRA
 (2 1 1 20) /ATHLETES/MALE/MENTAL/HIGHER SKILL LEVEL TOUGHNESS
 (2 1 1 21) /ATHLETES/MALE/MENTAL/winning or losing factor
 (2 1 1 23) /ATHLETES/MALE/MENTAL/HANDLING PRESSURE
 (2 1 1 27) /ATHLETES/MALE/MENTAL/DRIVING AMBITION

ATHLETES/MALE/PHYSICAL

*** Created: 13:59, 14 Oct, 1998.
 *** Last modified: 13:59, 14 June 2003
 *** The siblings of this node are:

(2 1 1) /ATHLETES/MALE/MENTAL
 (2 1 3) /ATHLETES/MALE/EMOTIONAL
 (2 1 4) /ATHLETES/MALE/ENVIRONMENT

*** The children of this node are:

(2 1 2 1) /ATHLETES/MALE/PHYSICAL/FITNESS LEVEL
 (2 1 2 2) /ATHLETES/MALE/PHYSICAL/DEALING WITH PHYSICAL INJURY AND
 PERFORMING

(2 1 2 3) /ATHLETES/MALE/PHYSICAL/PAIN TOLERANCE

ATHLETES/MALE/EMOTIONAL

*** Created: 13:59, 14 Oct, 1998.

*** Last modified: 13:59, 14 June 2003

*** The siblings of this node are:

(2 1 1) /ATHLETES/MALE/MENTAL

(2 1 2) /ATHLETES/MALE/PHYSICAL

(2 1 4) /ATHLETES/MALE/ENVIRONMENT

*** The children of this node are:

(2 1 3 1) /ATHLETES/MALE/EMOTIONAL/CONTROL

ATHLETES/MALE/ENVIRONMENT

*** Created: 15:01, 27 Jan, 1999.

(2 1 4) /ATHLETES/MALE/ENVIRONMENT

*** No Definition

*** Created: 15:01, 27 Jan, 1999.

*** Last modified: 14:58, 14 June 2003

*** The siblings of this node are:

(2 1 1) /ATHLETES/MALE/MENTAL

(2 1 2) /ATHLETES/MALE/PHYSICAL

(2 1 3) /ATHLETES/MALE/EMOTIONAL

*** The children of this node are:

(2 1 4 1) /ATHLETES/MALE/ENVIRONMENT/TRAINING BEHAVIOUR

(2 1 4 2) /ATHLETES/MALE/ENVIRONMENT/DEALING WITH THE CIRCUS

ENVIRONMENT

(2 1 4 3) /ATHLETES/MALE/ENVIRONMENT/MANAGING ONES LIFESTYLE

(2 1 4 4) /ATHLETES/MALE/ENVIRONMENT/REPEAT DEMANDS OF THE TASK

(2 1 4 5) /ATHLETES/MALE/ENVIRONMENT/SITUATIONAL DEMANDS

(2 1 4 6) /ATHLETES/MALE/ENVIRONMENT/DIFFERENT DIMENSIONS TO YOUR
GAME

(2 1 4 7) /ATHLETES/MALE/ENVIRONMENT/BEING THERE BEFORE

(2 1 4 8) /ATHLETES/MALE/ENVIRONMENT/MIXING IT WITH THE BEST

Appendix 4 .

Example – Individual Node Report

Elite Athlete 4

Q.S.R. NUD.IST Power version, revision 4.0.

Licensee: UNN.

PROJECT: PHD98, User FAWCETT TOM

ON-LINE DOCUMENT: ELITE ATHLETE 4 -Female

(2 2 1 1 6 3) /ATHLETES/FEMALE/MENTAL/DEALING WITH ADVERSITY/COPING WITH SETBACKS/SHOWING RESILIENCE

++ Units:46-46

(2 2 1 5) /ATHLETES/FEMALE/MENTAL/ABILITY TO MENTALLY PREPARE

++ Units:112-112 128-128

(2 2 1 6 2) /ATHLETES/FEMALE/MENTAL/EXPLORING THE COMFORT ZONE/PUSHING BEYOND WHERE YOU ARE NOW

++ Units:64-64 302-302 307-307

(2 2 1 9) /ATHLETES/FEMALE/MENTAL/CONFIDENCE

++ Units:64-64

(2 2 1 9 2) /ATHLETES/FEMALE/MENTAL/CONFIDENCE/KNOWING YOUR PARTNER

++ Units:88-88

(2 2 1 14 6 2) /ATHLETES/FEMALE/MENTAL/DEALING WITH PRESSURE/EXPECTATIONS/EXACTING STANDARDS

++ Units:104-104

(2 2 1 14 11) /ATHLETES/FEMALE/MENTAL/DEALING WITH PRESSURE/BEING FULLY PREPARED

++ Units:54-56

(2 2 1 15) /ATHLETES/FEMALE/MENTAL/winning mentality

++ Units:108-108

(2 2 1 17 1) /ATHLETES/FEMALE/MENTAL/HIGH NEED ACHIEVER/PUSHING ONESELF

++ Units:84-84 192-196

(2 2 2 2) /ATHLETES/FEMALE/PHYSICAL/COPING WITH PHYSICAL DISCOMFORT

++ Units:108-108 204-204

(2 2 3 1) /ATHLETES/FEMALE/EMOTIONAL/COPING WITH EMOTIONS

++ Units:154-154 158-158

(2 2 4 3) /ATHLETES/FEMALE/ENVIRONMENT/TRAINING TOUGHNESS

++ Units:50-50 60-60 68-68 228-228

(2 2 4 7) /ATHLETES/FEMALE/ENVIRONMENT/NECK TO NECK

++ Units:50-50 200-200

(2 3 2 1 1 6 3) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/DEALING WITH ADVERSITY/COPING WITH SETBACKS/SHOWING RESILIENCE

++ Units:46-46

(2 3 2 1 5) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/ABILITY TO MENTALLY PREPARE

++ Units:112-112 128-128

(2 3 2 1 6 2) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/EXPLORING THE COMFORT ZONE/PUSHING BEYOND WHERE YOU ARE NOW

++ Units:64-64 302-302 307-307

(2 3 2 1 9) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/CONFIDENCE

++ Units:64-64

(2 3 2 1 9 2) /ATHLETES/TOTAL SAMPLE
 ATHLETES/FEMALE/MENTAL/CONFIDENCE/KNOWING YOUR PARTNER
 ++ Units:88-88
 (2 3 2 1 14 6 2) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/DEALING
 WITH PRESSURE/EXPECTATIONS/EXACTING STANDARDS
 ++ Units:104-104
 (2 3 2 1 14 11) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/DEALING
 WITH PRESSURE/BEING FULLY PREPARED
 ++ Units:54-56
 (2 3 2 1 15) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/winning
 mentality
 ++ Units:108-108
 (2 3 2 1 17 1) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/MENTAL/HIGH NEED
 ACHIEVER/PUSHING ONESELF
 ++ Units:84-84 192-196
 (2 3 2 2 2) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/PHYSICAL/COPING
 WITH PHYSICAL DISCOMFORT
 ++ Units:108-108 204-204
 (2 3 2 3 1) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/EMOTIONAL/COPING
 WITH EMOTIONS
 ++ Units:154-154 158-158
 (2 3 2 4 3) /ATHLETES/TOTAL SAMPLE
 ATHLETES/FEMALE/ENVIRONMENT/TRAINING TOUGHNESS
 ++ Units:50-50 60-60 68-68 228-228
 (2 3 2 4 7) /ATHLETES/TOTAL SAMPLE ATHLETES/FEMALE/ENVIRONMENT/NECK
 TO NECK
 ++ Units:50-50 200-200
 (F 3) //Free Nodes/Does it exist ?
 ++ Units:42-42
 (F 7) //Free Nodes/Consistent nature
 ++ Units:269-269
 (F 12 29) //Free Nodes/Other definitions/PERSERVERANCE
 ++ Units:224-224
 (F 14) //Free Nodes/winning toughness
 ++ Units:257-257
 (F 19 14) //Free Nodes/Sources of MT/COACHES
 ++ Units:84-84 162-162
 (F 29) //Free Nodes/UNKNOWN QUALITY
 ++ Units:184-184

Appendix 5.

EXAMPLE NODE REPORT - EVENT PRESSURE

Q.S.R. NUD.IST Power version, revision 4.0.
Licensee: UNN.

PROJECT: PHD98, User FAWCETT TOM, 13:41, 6 April 2003

(2 1 1 23 14) /ATHLETES/MALE/MENTAL/HANDLING PRESSURE/EVENT PRESSURE

*** Definition:

AT THE EVENT AND THE CIRCUS

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+++ ON-LINE DOCUMENT: ELITE ATHLETE 23

+++ Document Header:

* No Header

+++ Retrieval for this document: 1 unit out of 240, = 0.42%

++ Text units 20-20:

* : It's the same with any performance and the preparation, you train to be able to achieve something which otherwise you perhaps wouldn't be able to achieve. Obviously the sporting event is the stage on which you need to achieve that for it to be relevant. Because everybody's a world champion on the training ground sort of thing. You know it doesn't matter... (laughs) its very good and makes you feel good going fast on the training ground and doing something really good in training, but ultimately that's not where the line is drawn in the sand. The judgement day is the competition day. So, in order to reproduce what you are capable of whether it be physically or mentally there is an element of control in order to replicate or reproduce what your best performance might be.

20

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+++ ON-LINE DOCUMENT: ELITE ATHLETE 7

+++ Document Header:

* No Header

+++ Retrieval for this document: 1 unit out of 336, = 0.30%

++ Text units 32-32:

*: Well it is dead easy, because when you get training it is obviously dead easy because there is no interference whatsoever, there is just you on the range and that is it. But then you go to a small competition like the nationals and there is, it is fairly straight forward, there are people you know, the same people on the range, etc., etc., but it is when, you know and then you go to an international and it is fairly standard again and you are use to it but when it is the Olympic games and you have got, you know it is the Olympic games and you know that there is cameras around, spectators around. You know we never really had spectators unless it was like the Olympic games and then it just appears to be a different ball game, even though it isn't. Still the same process that you have had to follow and it is really how much you can stay within that process without getting distracted. And that is what it is, it is like a distraction but I describe it, the way I would describe it is like it is almost like what I call Little Red Riding Hood syndrome, whereby you are in that house and you have got big bad wolf huffing and puffing trying to blow the house down, you know and it is how strong you have built your house to er, and what footings you have built it on to

how well it is going to withstand the big bad wolf outside. You actually feel that when you are out there. 32

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+++ ON-LINE DOCUMENT: ELITE ATHLETE 35

+++ Document Header:

* No Header

+++ Retrieval for this document: 2 units out of 267, = 0.75%

++ Text units 59-59:

*: All the time. Normally, like we have got to plan whether to train in the morning or go to physio or not, all those sorts of thing, you have got a routine to get yourself into, when you get to Olympic games I think this time it will be fine, even in Atlanta it was fine because the pool and the accommodation were all so close, but the roads, you had to think of that when you are travelling an hour to get to the venue and the driver of the bus didn't even know where you were going. You have got to handle that pressure, you have got to, you might sleep five or six hours, got twenty four hours, make sure that nothing really affects you too much. You have got to be sorted, you have just got to accept it really. 59

++ Text units 111-111:

*: after the race I mean I just felt bad, I was lying in bed one night and, not sure if it was that night or couple of nights later, but it was like half the world is watching me, a billion people or so watching it round the world, if you did think like that say two or three minutes before your race I am sure it would phase you but I myself never really thought about it, or particularly that there are sixteen thousand people here watching me 111

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+++ ON-LINE DOCUMENT: ELITE ATHLETE 36

+++ Retrieval for this document: 3 units out of 169, = 1.8%

++ Text units 79-79:

* You are basically looking for consistency. The people who are the best in the world who are consistently the best in the world are unbelievably talented. There are people who are like that but there are people who are not that talented but are willing to work really hard to achieve and I am like that. I feel that I was in the latter, I feel that I was not so talented, or as talented as some in the game but I had the ability to raise my game. For instance, there are people out there who in high jump who do personal bests in training, my personal best is 2.37 but I have never done that in training. I needed to competition in order to bring out that world class performance in me. 79

++ Text units 127-127:

* - yeah at the end of the day you have to set yourself goals. You know the grand prix circuit was a series of competitions. You compete in Rome and the next one is in Brussels, you get the flight and then it rolls on and on. You get to the position where there will be 45,000 people in the stadium and you'll be standing there and you can't get motivated! I use to travel with a guy called DG and we used to go to these meetings in Brussels, Rome, Zurich, Berlin and Oslo. Our goals were always the major championships, they were always the world championships and the Olympic Games. The rest was basically a way of getting yourself in shape and making some money. Its ridiculous to think back now and think of jumping in front of 45,000 people and if you asked me to do something else! Be

it reading out my name never mind competing , but it didn't motivate us really. We used to do things in those situations to motivate us more. I would say to Dalton and during the run up I would be saying are you watching this , are you watching this ? Stand behind the bed Dalton It gave us a bit of a lift and a bit of incentive. I remember running round the bend before the jump and shouting to Dalton , are you watching this ? I even shouted his name going over the bar ! Now having 45,000 people watching you, you would think it would be enough to motivate you to compete , but it got us through the grand prix final events. 127

++ Text units 129-129:

Ss I think it is , I had a long conversation with Darren Campbell the other day and he said if you look at the likes of Linford Christie when he was coming through , if you look at a typical season and the list of times you would be looking at 10 - 2's and 10 - 3's , (which were crap times) yet at the major championships he would be well lower. Because you set yourself goals accordingly. Money is not the be all and end all , although we all need money to live , but its not all about that really. To some its more than that and at the major events it is about that. I will get to the worlds or the Olympics stronger or I will do the grand prix circuit and make the money ! yet when you get to the major championships you are shot to pieces ! All your best performances are left behind on the grand prix circuit ! 129

CONT

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